A comparison study of digital business models between China and Switzerland

The key factors of the digital business models with focus on the retail industry

Bachelor Thesis

Bachelor of Science in Business Information Technology

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Management Summary

Digitisation involves changes in different areas of society and defines the new direction of businesses. The most visible field of which is the retail industry. Moreover, technology-oriented business models become a modern and preferable way among consumers. Notably, China's high GDP growth is highly related to this development because digital retail already penetrated daily life and formed a business eco-system. In contrast, the effect of those business models has not yet overtaken the Swiss economy, since the traditional market is still dominant regarding its profound economy structure. However, new emerging technologies may have the chance to lead another revolution and hence bring the large potential of digital business opportunity globally.

This Bachelor thesis aims to compare the business environment of digital business models in the retail industry between China and Switzerland. It discusses different macroenvironment perspectives to scrutinise the key factors.

This thesis approaches the research question with the qualitative method. The empirical part consists of a comprehensive literature review and interviews with experienced cross-country experts in China and Switzerland. Furthermore, the professional literature of both countries primarily contributes to the development of the theoretical background. In addition, interviews with Mr. He (CEO of World Internet of Thing Conference), Mr. Berner (service manager from Huawei) and Dr. Wu (graduated from UZH) accomplished this study.

The empirical studies reveal the different approaches of digital transformation in the retail industry in China and Switzerland. China presents its reliability of economic development on technological development whereas Switzerland does on its legal framework. Despite, the comparison and interviews illustrate the similarities in their macroenvironment of implementing digitalisation. The acceptance of technology in the two countries influenced the transformation process in their respective retail industries. Similarly, cybersecurity has been the main concern to prevent rapid digitalisation. Exceptionally, there are numbers of organisations that considered the transformation as a great option to resolve the security issue. Furthermore, new digital retail businesses depend

on direct and decentralised communications between physical shops and online distributions in order to remain sustainable. Collectively, the key factors for accelerating the digital business models in the retail industry are the acceptance of technology, security and online-offline connectivity.

Due to the time and scope limitation, this thesis focuses on the macroenvironment of the retail industry regarding digital business models. Therefore, this study provides insightful instructions to future digital business models comparative studies between China and Switzerland such as microenvironment, customer perspectives and the impact of the economic models towards competitive advantages. Moreover, this study also serves as an informative foundation regarding the collaboration and M&A activities on technologies between both countries.

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Glossary

AI	Artificial Intelligence
B2C	Business to Consumer
C2C	Consumer to Consumer
DDoS	Distributed Denial of Service is the cyberattack of webservice from zombie networks
FADP	Federal Act on Data Protection
FinTech	Financial Technology
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
ICT	Information and Communication technology
IoT	Internet of Things
IT	Information Technology
NFC	Near-field communication (4cm) between 2 electronic devices
OBOR	the 'One Belt One Road’

1 Introduction

This chapter introduces the situation and problem as well as the contribution of the thesis. Moreover, together with the delimitation and structure of the work, this introduction provides an overview of the whole thesis.

1.1 Overview and problem definition

Both the Internet and the associated technological change have taken place to influence and even transform human coexistence and socio-economic activities This technological progress is not only visible in our everyday lives but is also embedded in the operative course of business. Digitisation is intertwined with modernisation and automation; in this context, it also changes social behaviour and stimulates new innovative business models. Therefore, since technology is indispensable, digital companies worldwide are thriving. The traditional market increasingly implements technologies and adapt itself to industry 4.0. Particularly, Big Data and Artificial Intelligence (AI) function as a mechanism in the digital business structure. Moreover, IT services and information system integration develop into mainstream. Additionally, technology influences customer decision-making and excavates recessive favours. The process of change continuously driven forward by consumers, companies and digital technologies is called digital transformation.

In recent years, there has been a profound change in digital transformation in all industries over the world due to growing economic activities. Innovation based on disruptive technology is the main factor to meet customer requirements in digital business. Accordingly, the boundaries between industries are blurring therefore higher quality and better services are possible. Especially in the retail sector, the most noticeable and closely related industry to daily life is changing seriously. Unlike the manufacturing sector where efficiency is more significant, retail sector customer-oriented business structures pursue the core value “to create unique value for customers”. Because of this, new digital business models with disruptive technology accelerate the digitalisation of products, services, value chains and processes to respond quickly on the customer paradigm shift. For example,

FinTech, abbreviate for financial technology, offers exclusive information technology-based financial products, which simplifies the financial services and payment method; e-commerce platform, which transacts online, facilitates the purchasing process while saving time (Scheuble, 2018).

In today's digital world, companies need to collaborate and form a digital ecosystem in order to create growth potential. A great example of a highly technological connected business environment in China. Based on its sharp innovation and technology growth in the last 10 years, China successfully placed itself as the world second-largest economy. Government still invests a big amount of money in AI and Big Data, which boosts the development of e-commerce as well as other digital business models related retail industry. The large population provides a great number of users and data to enhance the business process. Not only developing country is revolutionarily changing but also do highly developed countries such as Switzerland experience a significant digital transformation in numerous business models. For example, the introduction of the mobile payment method Twint has taken importance to daily transactions. The changes could be seen from the increasing self-checkout machines with Twint payment at grocery stores Migros and Coop. However, the conventional banking sector is still dominating the economy (Dutta et al., 2019; Twint, 2019).

China as a fast-growing developing county exceeds the economically highly stable country Switzerland in digitalisation revolution. The question arises as to how different countries and companies manage to step into the “blue ocean” (a new and unexploited market), which means to strategically maintain a permanently profitable business models during this disruptive process. For this reason, this paper closely discusses the environment of the digital business models in the retail industry of China and Switzerland. Derived from this, the research question of this thesis is: What are the key factors of the digital business models in the retail industry?

1.2 Contribution and delimitations

This thesis aims to examine the key factors of the digital business models in the retail industry. In the process, the thesis scrutinised and compared the digital business environments between China and Switzerland. Moreover, this paper as a description of exploration includes diverse perspectives of consideration. Moreover, this thesis provides a general idea of how the effects and future of the digital transformation to our economy and life.

In order to offer a profound analysis, this paper limits itself in two countries, Switzerland and China. Switzerland and China are very contradictory in terms of economic status, population, size and digitalisation, which make it an insightful comparison. On account of the scope and time aspect, it is not possible and also not necessary to discuss the digital business models in all industry. Among all industries, this paper chooses to focus on the retail industry, because the retail industry is the most overarching and close to everyday life. This paper briefly mentions manufacturing and education as well to provide other aspects of the comparison. Furthermore, customer perspective would not be given major attention, because this paper mainly concerned with the business itself. In addition, due to limited customer perspective, the recommendation for action is not holistic and feasible. Therefore, this thesis serves as a description of an exploration.

1.3 Methodological approach and structure

The methodological approach of this research adopts qualitative method. The analysis was based on literature research from the previously published researches as well as current news. Furthermore, in order to create a clear reference to practice, interviews with experienced cross-country experts between Switzerland and China represents the empirical part. The content of the interview is to receive a different point of view of comparing digital business development and outlook in both countries. Interviews conducted in another language have been translated into English and can be found in the appendices.

The following chapter 2 explains the terminology used in the main part. The main part is divided into 3 sections. The first section, chapter 3 and 4, use a timeline to

describe the technology development in China and Switzerland. Thereafter, chapter 5 applies the PEST analysis based on the information results in the first section to compare the macro environment of the digital business models in the retail industry. Finally, chapter 6 evaluates the key factors regarding the expert interviews together with the comparison formerly. In the conclusion section, this paper summarises the key factor of the digital business models in the retail industry. Moreover, after presenting the limitation of this research the conclusion recommends further possible research area based on the insightful result.

2 Theoretical Background

To investigate the research question, a basic understanding of current economic and technological trends is required. To help answer the research question, the relevant terms are presented in this chapter.

2.1 Digital business models

A digital business model can be defined as a disruptive business model, which applies technology to create added value. The main types of it, as shown in figure 1, are e-commerce, on-demand services, subscription-based platform, tow-side marketplace and hidden revenue generation companies, etc. Moreover, digital companies use modern technologies to improve their core activities. Therefore, this kind of business models includes both pure digital companies as well as traditional brands to adapt themselves to the market.

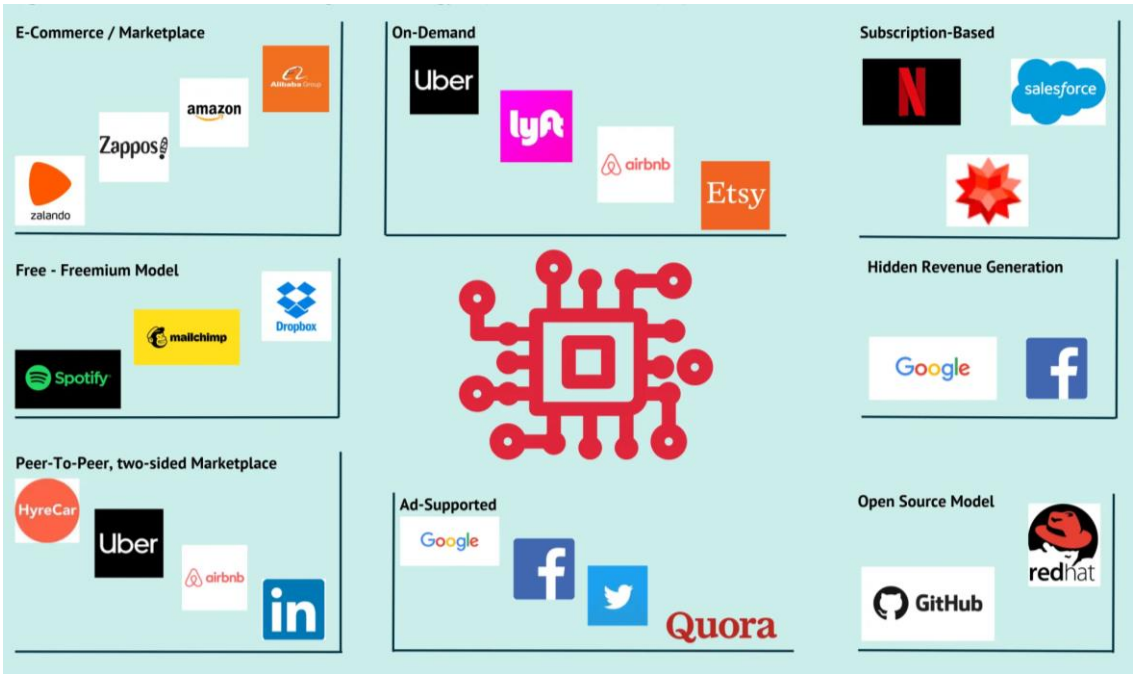

Figure 1: Digital Business Models Map (Cuofano, 2020)

2.2 Disruptive Technology

Disruptive technology is a new technology that replaces the existing technology, product or service or optimises it without structural changes. The performance characteristic of disruptive technology is inferior for typical users, but it is usually in the interest of users in niche markets. As a result, after the successful development of disruptive technologies, classic performance characteristics also improve. In addition, it provides a viable alternative to the industry's traditional technology (Braune & Landau, 2016).

2.3 FinTech / Third-party payment / Mobile payment

The term FinTech is composed of the two English words "Financial" and "Technology" and hence stands for financial technology. As the name implies, this financial sector is dedicated to the intensive use of digital technologies. FinTech companies have a more streamlined cost structure compared to established banks due to the use of robust and cost-effective technologies. Another point of cost advantage is the focus on online and mobile sales channels instead of physical locations. Using disruptive technology, FinTech companies develop new innovative services, for example, third-party payment or mobile payment in addition to optimizing existing financial services (Braune & Landau, 2016).

Third-party payment refers to a transaction in which a third-party operator mediates the collection of payments between buyers and sellers. The reason for the term “third party” is that these platforms do not involve the ownership of money. It only plays a trans-shipment role. Today, third-party payment is increasingly applied on mobile devices. The so-called mobile payment uses mobile electronic technologies to initiate, authorise or realise the payment (Xu, 2016).

2.4 PEST analysis

PEST analysis is an English acronym for Political, Economic, Social and Technical. This macroeconomic comparison model selected could better illustrate the proposed research question. In detail, with the help of the PEST analysis, this paper describes the macro business environment in terms of specific market conditions such as developments and their effects, and to create a substantiated

basis for management decisions. The factors influencing the PEST analysis are presented below (Hungenberg, 2014).

Political

The political-legal environment includes primarily the framework conditions for economic activity prescribed by the government. These legal regulations from the government such as corporate governance, patent regulations and industrial policies are influential to business strategic decisions. In addition to nation-states, supranational institutions, such as the EU, with their committees are becoming increasingly significant (Hungenberg, 2014).

Economic

The economic analysis focuses on general economic development. A distinction should be made between larger economic areas and individual national economies. Important influencing factors from the economic environment are the development of economic growth, interest rates, the inflation rate and exchange rates. In addition, individual cases depend on the structure and developments in the macroeconomic environment (Hungenberg, 2014).

Social

Employees, customers or suppliers form a society, which affects companies with their structural features such as population structure or educational system. Most importantly, societal influences come from values, attitudes and behaviours of individuals in a society. These are also influenced and reflected by cultural, religious and ethical principles. For example, as has been observed in the environmental protection in recent years and decades, companies must also adapt to this change if the values and attitudes of the members of a society change (Hungenberg, 2014).

Technology

Technological factors include research, new products and processes, product lifecycles, government research spending, which lead to altered work processes in companies that allow huge efficiency improvements. However, it may also result in serious changes in the markets, for example e-commerce. Such changes

involve risks but can also create completely new opportunities for companies (Hungenberg, 2014).

2.5 Omni-channel

Omni-channel is a cross-channel business model for companies to improve customer experience management. Figure 2 well describes the digital connectivity around the retailer. Stationary trade in a traditional shop extends itself with the new purchasing environment including portable access (mobile and phone), e-commerce platform and social media distribution channel. Consequently, this forms a positive continuous cycle around the retailer. By using the omni-channel, dealers become accessible to customers who use more than one distribution channels. The combination of offline and online channels results in a higher purchase frequency and thus a higher monetary expenditure. Moreover, careful analysis of the data can improve the quality of the decision-making process (Hübner et al., 2016).

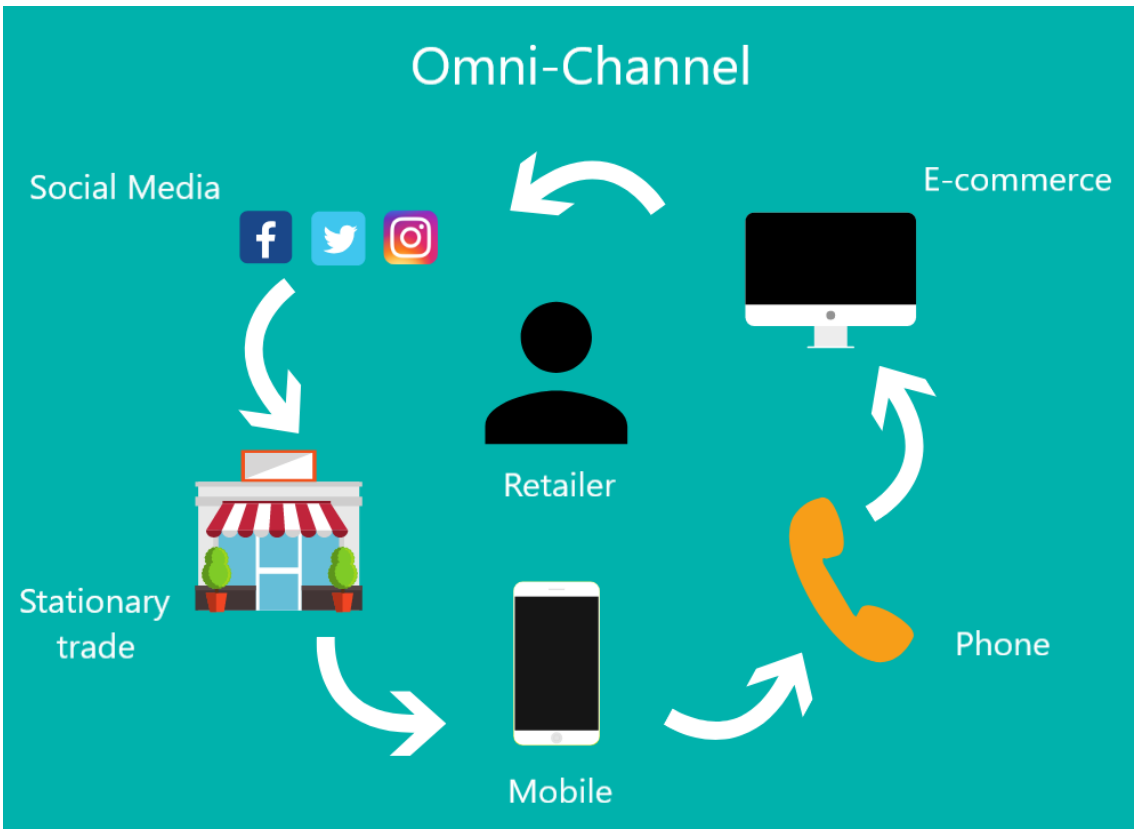

Figure 2: Omni-channel (Süss, 2019)

3 Digital transformation in China

New digital business models have been emerging for the last few decades. Consequently, economic costs have been significantly reduced and efficiency has been dramatically improved. Based on digital transformation, industrial organisations and the real economy have continued to grow. For a company to be compatible with the international market, digital transformation is a significant parameter. As an illustration, China's 13 years of digital revolution raised its GDP to around 6.6% annually and made it the country with the second-largest GDP in 2010, which is still today (WawamuStats, 2018). The rapid expansion of technology and digitalisation in China has greatly simplified the way of doing business. In this chapter, a timeline of digital development about China is presented, and the historical development, current situation and outlook are correspondingly discussed.

3.1 Historical development

One of the most crucial factors in business is the number of customers. Accordingly, the essence in the digital business model is the number of users. The early phase of China's digital economy development benefited from the innate advantages of the population, which provided a natural foundation for the rapid growth of the Internet industry. Back in 1994 when China formally gained access to the Internet and entered the Internet era, also known as industry 3.0, a large number of pioneering enterprises in the Internet industry were established. Some well-known companies such as Sina Corporation, Alibaba Group, Baidu Inc and Tencent Holdings Ltd. were all founded then. At this stage, the business models of China's digital economy were still relatively plain. In general, news portals, mailboxes and search engines represented the business models. The phenomenon of start-ups imitating successful business models from foreign countries was common because technological innovation had not yet received sufficient recognition. In that era, volume scramble and user accumulation were core elements of competition (Guo, 2001; W. Hu, 2018).

Between 2003 and 2012, e-commerce, as disrupt digital business model, was driving China to enter a high growth period. This is comparable to industry 4.0,

which disrupts from the technology in the industry 3.0 into new digital business models. Alibaba launched an e-commerce platform named “Taobao” in the first half of 2003, and this successful localised business model and forced eBay to exit the Chinese market eventually. In the same year, Alibaba also launched a product “Alipay”, which gradually became a leader in the third-party payments (Alibaba Group, 2020). In 2006, its online retail turnover reached 100 billion Chinese yuan, and the growth rate remained above 50% for that period (Chinese National Bureau of Statistics, 2019). To note, at that time, other new industries continued to emerge. Social networking services, such as blogs and Sina’s Microblog (Weibo), enabled the individual Internet users to have a profound impact on the social economy. In the same year, Tencent’s live chat application “QQ” became the standard live chat tool for more than 100 million registered users. In 2009, virtual community games, which were based on the significant increase of social networking websites, became a public trend. However, in 2012, because of the widespread availability of 4G in China, which significantly supported the increase of mobile user number, the nearly ten-year double-digit growth ended. In addition, the industry’s development and profitability model, which relied on the rapid growth of Internet users, were facing challenges. According to a report from China Internet Network Information Center (CNNIC), by the end of 2012, the number of Internet users using mobile phones to access the Internet exceeded that of using desktop computers. In addition, the 420 million mobile Internet users indicated that China’s digital economy had entered a new stage of development (China Internet Network Information Center, 2013).

As the number of mobile Internet users soared, the Internet industry entered the mobile era. Moreover, the basic pattern of China's digital economy was formed and was entering a more mature stage. Based on information interoperability, smartphones comprehensively connected people’s lives online as well as offline. At this stage, the Internet had a deeply bidirectional impact on, for example, the internetisation of traditional industry. Almost every part of life service moves online, such as taxi, food delivery and even laundry and housekeeping. Additionally, new innovative Internet-based business models continued to appear. Dockless bicycle-sharing systems (such as ofo) and live-streaming models combined

with online shopping are two such examples. Nonetheless, not all traditional industries were able to transform successfully. Among others, Internet medical care was left behind, because it is mostly operated by the government. Therefore, it is difficult for private technology companies to make changes in the medical field (Guo, 2001; W. Hu, 2018).

3.2 Current situation

Currently, China is undergoing a technological revolution which may transform and upgrade the economic and industry structure. The Chinese know that the former way of basing economic development on resources is not feasible anymore. Therefore, digital technologies and innovations in multiple fields are urgently required. This new development path should continually merge the traditional market with the digital market and use this synergy to expand the economy. As a result, the breakthroughs represented by digital technology deepen its use into the real economy. The impact of China's digital economy on all aspects of domestic social life has become the most discussed topic in recent years. Moreover, digitalisation, connectivity and intellectualisation in all fields allow end-users to enjoy an unprecedented convenient lifestyle. Almost all aspects of clothing, food, housing and transportation have been upgraded, which means that traditional business models have been completely reformed in the digital era. For this reason, all new business models are experiencing innovative transformation, whether it is the battle for third-party payment, the intense competition for the delivery app, or the standardisation of the sharing economy. With this in mind, this chapter highlights three technologies to closely analyse the developments and changes happening in China (China Academy of Information and Communications Technology, 2017; W. Hu, 2018).

3.2.1 Third-party payment

Third-party payment first originated in the Independent Sales Organisation (ISO) system in the United States. Thereafter, in 1996 a group of third-party payment companies gradually emerged, namely Amazon Pay, Yahoo!PayDirect and PayPal. As mentioned in the last paragraph, China's first third-party payment system, Alipay, was originally created in 2003 to solve the online transaction security issue of Alibaba's e-commerce platform "Taobao". At that time, electronic payment license was not liberalised, which means that the Alibaba group was having both legal risks and technical difficulties (Xu, 2016). In China, the government regulates it according to the development of the industry when the industry develops to a certain size. In doing so, the government encourages innovation and gives the full potential to the market in the early stages of the industry's development. However, Alipay did not have a licence but it was regulated by the People's Bank of China. After Alipay separated from Taobao in 2004, it gradually offered payment service to more partners and established itself with the lucrative third-party payment in the FinTech industry. With Alipay's over 53% market share, it is the largest online payment platform in the Chinese market now (Pan, 2019). The largescale development of Alipay's further business is closely related to the cooperation with all China's major banks. Specifically, the collaboration with banks is generating a mutual benefit. On the one hand, third-party payment platforms are using cooperating banks' credibility in the online transaction to solve the trust issue. In return, third-party payment releases the pressure of the bank during the peak period. To demonstrate, 11.11.2019 the single's day (the number 1 in the date 11th November symbolises the single person) generated 544,000 transactions per second and around 90 million SQL database queries (Sun, 2019). By using Alibaba's own database "OceanBase" Alipay is extremely robust against breakdowns, which effectively backups banks from crashing down (AliCloud, 2018).

In the blue ocean of third-party payment created by Alipay, all companies focus on customer-oriented strategies, manageability of the product and the dependency of the consumers. Besides, companies seek disruptive innovation combining information technologies to establish their market share. In particular, WeChat Pay, an integrated mobile payment function in Tencent's Chat service has formed

an oligopoly on the mobile payment market. In 2016, taking the WeChat Pay's Chinese New Year Red Packet as an opportunity, money transfer became another driver of mobile payment expansion. Since then, the share of Internet payment is narrowed year by year, while the share of mobile payment is ramped up. With an 86% of coverage rate in China, third-party payment has become the most common payment method for the daily consumption, which is heavily used in the fields of restaurants, convenience stores, invoices, transportations, medical care and delivery services etc. (Zhang H., 2019). In other words, third-party payment is going to form a digital financial ecosystem. Correspondingly, more and more AI-based algorithms are developed in this incremental innovation battle. China's third-party payment methods are not only using big data and machine learning algorithm but also using biometrical recognition technology, such as face recognition, to provide an innovative customer journey. Furthermore, authorised parties can use blockchain technology to trace the integrity of donations, the origin of imported food or electronic royalty invoices. With the expansion of the digital financial ecosystem, the levels of transparency and verifiability also increase making the data being traced doubtlessly (Ant Financial Technology, 2019; Waibel & Käppeli, 2015).

Before 2013, third-party payments were mainly made online and the industry's growth rate was led by e-commerce, represented by Taobao. After 2013, the rapid penetration of smartphones and 4G networks greatly boosted the development of the mobile payment market. Consequently, since 2013, the transaction size of the third-party payment market has grown at an average of 50% annual growth rate (Qianzan Industry Institute, 2019b). Some of the Internet payment scale to the mobile end. On the other hand, people's offline and near-field communication (NFC), which is within 4 cm and between 2 electronic devices, payment habits promoted the scale of mobile payment to grow significantly. As illustrated in figure 3 below, in 2017, the total transaction size of China's third-party payment industry reached 100 trillion yuan (13.66 trillion CHF). Within 2 years, in 2019, the number doubled again to 200 trillion yuan (27.33 trillion CHF).

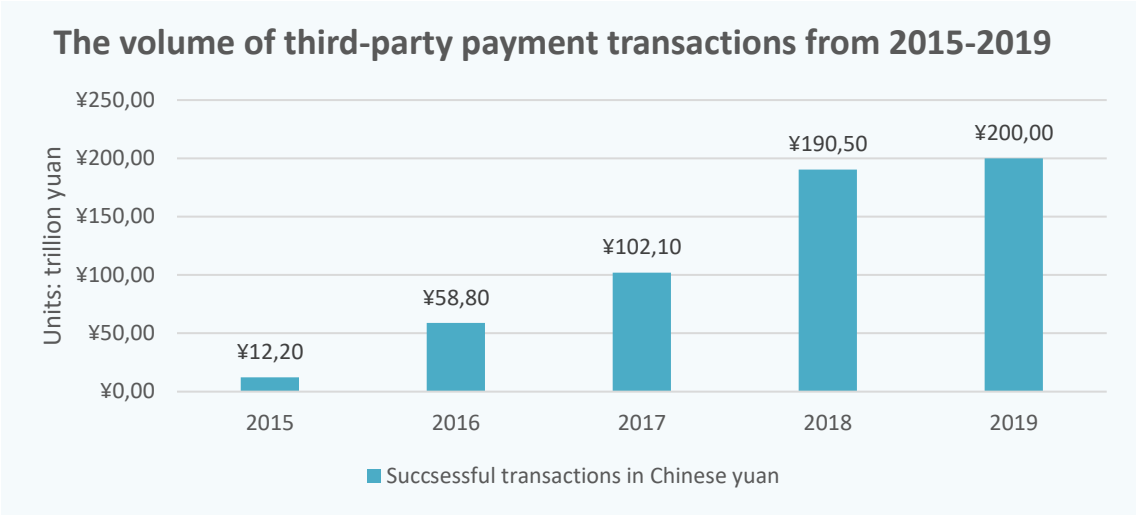

Figure 3: The volume of third-party payment transactions from 2015-2019 (LingYi Financial, 2018)

3.2.2 Development of e-commerce

In recent years, the Chinese government has continued to implement fiscal policies to accelerate the utilisation of e-commerce to small and medium enterprises. Domestic and foreign environments are conducive to the development of e-commerce between enterprises in China. Furthermore, e-commerce enterprises launched mobile endpoint, and their promotions were constantly released according to the related products. Therefore, based on third-party payment, the rapid development of mobile shopping became an important driver to stimulate the overall market growth of China's e-commerce. To emphasise, China's biggest online shopping platform Taobao generated at 11.11.2019 (the single's day) 1360 times more transaction peak than in 2009 and a turnover of 268.4 billion yuan (37.4 billion CHF). Moreover, during ten years' time, the total e-commerce transactions in China grew tenfold, as illustrated in figure 4 below, by the end of 2018 exceeded 30 trillion yuan (4.18 trillion CHF) (Sun, 2019; C. Zhang, 2019).

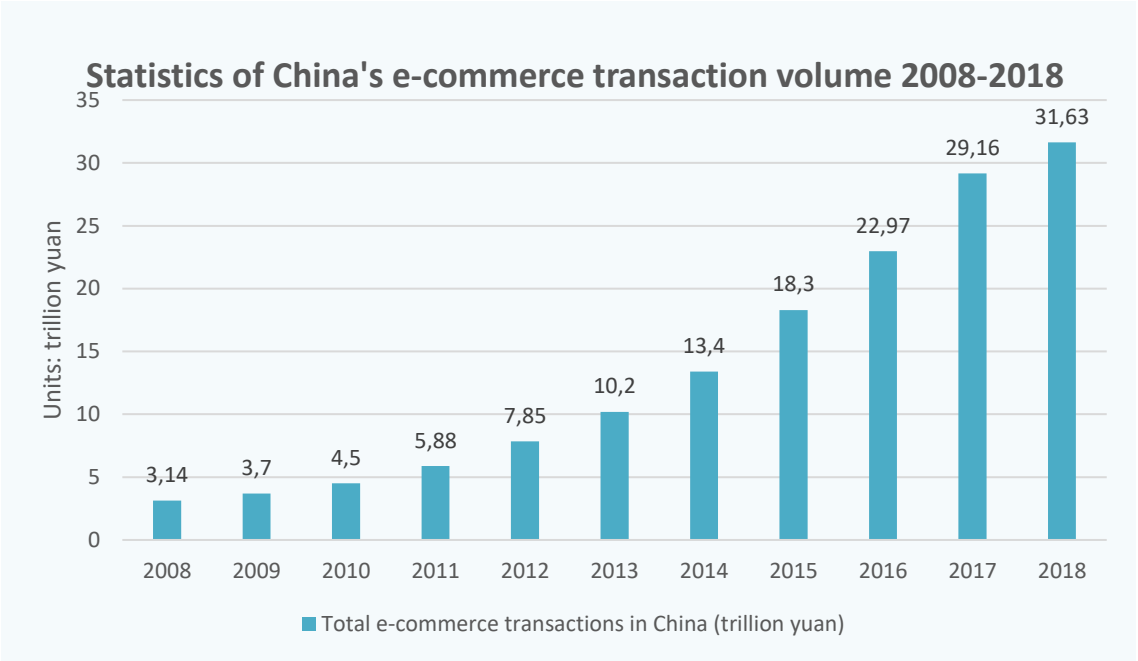

Figure 4: Statistics of China's e-commerce transaction volume between 2008-2018 (Qianzan Industry Institute, 2019a)

Comparatively, China's state-owned telecom operators have responded positively to the government's goal of expanding broadband network construction to cover tens of millions of new households each year. As a result, Internet penetration is growing rapidly, and almost every social class can afford 4G. The number of mobile users rocketed due to the popularity of smartphones, tablets, high-speed Internet access and wide coverage of wireless broadband. Nowadays, the most well-known e-commerce brands such as online shop Taobao, taxi service provider DiDi and grocery store Hema Xiansheng etc. are implementing an omni-channel, via mobile phone application, to enhance their customer service, marketing and product sales. This enables them to have a unified and connected user experience online and offline. That means, user experience can be created no matter where the customers are or how they are connecting with the business. As a result, a unified brand image will ensure the coherent experience for their consumers, which in turn will lead to better sales performance for e-commerce. Furthermore, so-called social commerce was created while social media played a large role in the purchase decision-making process of modern consumers. By publishing articles on social media platform with a purchase link will leverage social media and convert user engagement into direct business. Consequently, mobility has changed every aspect of people’s lifestyles in China. This shopping

trend has formed a new streaming commerce model. In fact, live streamers use a streaming application such as TikTok, similar to YouTube and Instagram, as a distribution channel for their products or entertainment services (McKinsey China, 2014; Qianzan Industry Institute, 2019c; Venture Bond, 2019).

Similarly, e-commerce logistics has also benefited from the physical infrastructure that China has built over the past two decades. In addition to the state-owned China Postal Parcel Service, there are many private logistics providers in China suffer from surviving. As a result, these companies hire a big number of less-educated couriers and equip them with e-scooters instead of cars. Due to high traffic jam in China, e-scooter could reach the customer faster and is more flexible than a car. By applying this strategy, privet operated logistic companies reduced their price almost to the marginal level. This delivery model has formed a whole new industry, which is growing sharply in China now. Although the couriers are not well paid, there are still numerous people, who were not meeting the market need due to educational level, able to find jobs. As a result, it costs buyers extremely little to buy the product, and this low cost is borne by e-commerce sites that focus on growth rather than profit. Notably, the small delivery cost and C2C business model make the entry barrier in this industry low. In other words, anyone can become an online merchant regardless of the authenticity of the product. According to the statistics of China Business Industry Research Institute: at present, the scale of e-commerce industrial zones nationwide reached nearly 2,000 (Analysis of Cosmetic Industry in China, 2017). Furthermore, this high-speed development of Chinese e-commerce also expanded cross-border. In fact, Russia's main foreign e-commerce platform is from China, which accounts for 90% of overseas parcels and 50% of Russia's overseas online purchases (McKinsey China, 2014; Qianzan Industry Institute, 2019a, 2019c).

3.3 Future trends

New products, services and forms of the digital industry have emerged in large numbers, which becomes an important driver of high-quality economic development. The emerging technologies together complete the new transformation directions, the achievements of China’s digital development are outlining the new

phase of the digital era from different angles. Network infrastructure capabilities continue to escalate. The electronic information manufacturing industry is moving towards high-quality development, and new retail industry has made a breakthrough. Remarkably, information technology, for example, 5G is a foundation for disruptive innovation of the traditional retail market. However, the fast growth of digitalisation is raising new security concerns, which will be further discussed in detail in chapter 3.3.2.

3.3.1 Improved online and offline retail connectivity

China increases the construction and development of "Digital China", which provides many advantages in the 5G battle. This fifth generation of mobile communication standard is faster than 4G. On condition that the Chinese government has been promoting the development of the 5G industry, China is expected to be the largest 5G market by 2022 (Nie, 2018). Consequently, as a result of high-speed mobile internet access and cheaper internet cost, more shopping opportunities would arise. However, 5G network construction is a stepwise process, which means that 4G and 5G will coexist over the next decade.

Since the end of 2019, China's 5G user scale and network coverage have expanded rapidly. According to the Ministry of Industry and Information Technology, by the end of 2019, 35 domestic 5G mobile phone models have been licensed to enter the Internet. Moreover, 13.77 million 5G mobile phones have been launched in the domestic market, which shows a significant upward trend. By the end of 2025, 5G user penetration rate is expected to be 48% (Zheng, 2020). Correspondingly, telecom operators captured this opportunity to transform and profit from the new disrupting business model B2B2x as shown in figure 5. This means that telecom service provider integrates telecom and IT services (5G) with applications in order to offer services to multiple partners among other customers, retailers, suppliers etc. All retailers today should pay close attention to the upcoming of the 5G era, which will transform the consuming pattern. With the commercial launch of 5G networks, the retail industry could reach a new level. The innovative factors such as augmented reality (AR), virtual reality (VR) and IoT could give the consumer new shopping experience. These technologies could combine and simulate different human sensory impressions such as image and

sound, by which consumers are able to observe the representation of products. This significant transformation results in new challenges as well as opportunities for the retail industry. Besides, policy improvements still need to be promoted in areas such as accelerating network construction, establishing industry standards and addressing social issues etc (Gu, 2019).

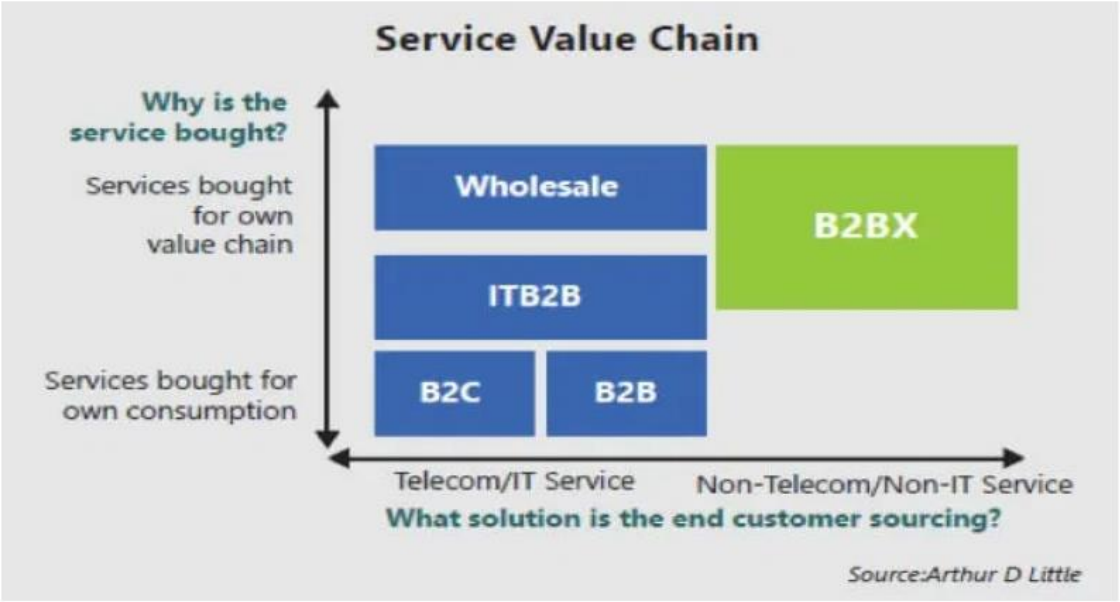

Figure 5: Service Value Chain in B2B2x (Dharmraj, 2018)

In addition to the smart retail industry, 5G's greater value is to empower vertical industries during this hard time while having COVID-19. China has been deeply implied by 5G and IoT. In the construction of prefab hospitals in Wuhan, the telecom operator quickly built a 5G base station. They cooperated with China Central Television (CCTV) and provided a cloud monitoring of the project to the millions of netizens. Besides, 5G telemedicine and teleconsultation systems were used at all hospitals across China. Furthermore, 5G has also incorporated many new applications scenarios in this epidemic, such as 5G could-based robots, 5G+ drones, 5G+ thermal imaging technology etc. The new generation of information technology, represented by 5G, has proved to be a positive force in responding to the virus crisis. Nevertheless, 5G has more explorable potentials in and beyond the health industry. 5G is increasingly used in household appliances in China, which will contribute to more various services to daily use (Zheng, 2020).

3.3.2 The challenge of cyber security

In the early days of Internet penetration, the restriction was a side issue because the stronger focus was purely on connectivity and building e-commerce. As things have two sides, the accessibility of the Internet has created some issue such as DDOS-Attack, Blackmailing, SQL injection, data breach etc. For example, according to Alibaba's cyber security solutions, Alibaba Cloud blocks 200 million brute force attacks, 1000 DDoS attacks and 20 million web hacking attacks every day (Alibaba Cloud, 2018). As fast as the new digital transformation is expanding, digital crimes are deriving. The serious challenges in information and cyber security attract more attention.

All industries have digitalised their core business to adapt to the trend. Furthermore, the huge number of China's population has made the situation for cyber security even more urgent. To ensure the security of user information and a stable operating system, more efficient prevention, detection and recovery process and a healthy cyber environment are fundamental for digitalised retail. Based on the increasing number of cybercrimes and public outcry regarding privacy terms, the government paid more attention to the issue of cyber security and gradually improved relevant regulations. Additionally, the government has established an incentive system for reporting and increased public participation. In June 2017 China's cyber security law came into effect. Similar to Europe's General Data Protection Regulation (GDPR), it set rules for internal internet retail environment as well as cross-border e-commerce data transfer. All third-party payment method in China requires personal identification through the identification number. Moreover, if network operators fail to require users to provide identity information or fail to cease the transmission of prohibited information, they might be applied a penalty. Companies who fail to perform their network security protection duty will be suspended of business or their website will be closed. However, due to the encouraging principals for the start-ups, the regulation will only be made after the digitalised retail industry developing to a certain size. Therefore, this big gap in the regulatory system would not be easy to be eliminated in the early stage or new business models (Chen et al., 2019).

3.4 Summary

This chapter specifically focused on the development of China's digitalisation. Chapter 3.1 introduced the development of e-commerce and third-party payment, which highly affected GDP growth. Moreover, the numerous new digital business models emerged based on the spread of changing into the mobile market. In the current time, third-party payment still played a fundamental role in disrupting business development. The emerging C2C business models provided many individual economies to accelerate the macroeconomy. Correspondently, China is a frontrunner of digitalisation based on the high user volume and acceptance of digital business models in the retail industry, as described in chapter 3.2.1 and 3.2.2. Additionally, the government also investigated plenty of resources in the digitalised retail industry. As examined in chapter 3.3, the primary focus of technology and security issue has an expansion purpose behind. To pursue greater globalisation and establish in the foreign market could be seen as a central ideology of China. Therefore, China's economic growth is highly related to digitalisation.

The following chapter uses the same analytical structure to demonstrate Switzerland's digital business development.

4 Digital transformation in Switzerland

Rapid technological progress changes the behaviour of companies, consumers and employees. The new type of business models, products and services, and job profiles are arising. These changes offer countless new possibilities, but also create uncertainty for companies and people regarding their competitiveness and their prospects on the labour market. At the same time, technological progress is creating gratifying new perspectives for all of us as consumers in the form of cheaper, more transparent and more convenient offers. Switzerland, therefore, is well-positioned in the industry 4.0 with its economy. Accordingly, this chapter firstly examines the history of Switzerland's digital transformation, secondly the current situation and finally a brief outlook.

4.1 Historical development

Digital development is often presented as a fundamental technological breakthrough with a revolutionary character. In the second half of the 18th century, a series of industrial revolutions, as shown in figure 6 below, has begun. In the industrial revolution progress, muscle power was slowly replaced by mechanical power, and the increased cognitive powers changed human production. This process continued until the Fourth Industrial Revolution.

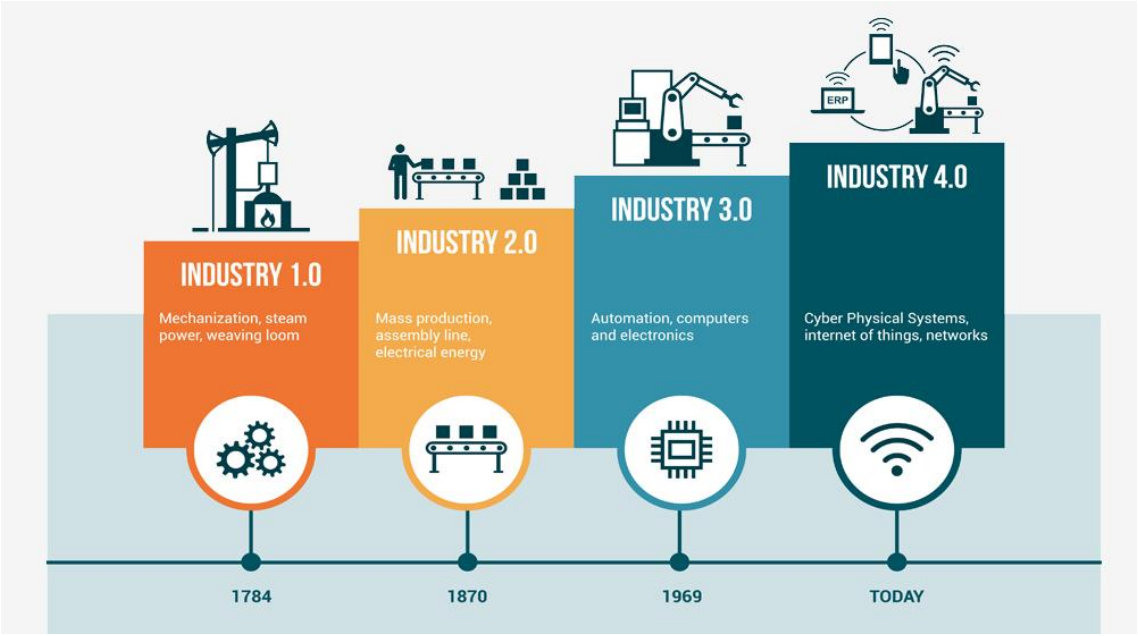

Figure 6: Industrial Revolution (Oluwaseun et al., 2019)

The First Industrial Revolution lasted from 1760 to around 1840. It was driven by the invention of the steam engine and construction of railways. However, due to a lack of coal resources and richness of hydropower, steam engines have never been as important in Switzerland as in other industrialised countries. Thereafter, at the beginning of the 19th century, the second industrial revolution, the invention the electrical energy and the introduction of the division of labour in assembly-line production played a relevant role. Moreover, the third industrial revolution is known as the computer or the digital revolution. For this reason, it is presented by mainframes, personal computers and the Internet. ICT triggered this "digital revolution" that is continuing worldwide and in all areas without any foreseeable end (Economiesuisse, 2017).

Based on the “digital revolution” a so-called industry 4.0, which represents the Fourth Industrial Revolution, dominates this century. Its characteristics are a ubiquitous mobile internet as well as more powerful sensors with extremely low production cost. This is also applicable to the retail industry. For example, by using technologies such as AI, Bigdata and 5G, companies could process their customer data quicker to find a certain pattern and increase the revenue. The core hard- and software of those technologies are not new. They are improved more complex and integrated based on the version of the Third Industrial Revolution with disruptive innovations. Additionally, traditional stores could hence offer self-checkout or robots in the warehouse in order to offer a smarter commercial environment. For more clarification, the rest of this thesis the word retail 4.0 will be used instead of industry 4.0. In this way, retail 4.0 promotes fundamental social and economic structural change at national and global levels. The world is therefore at a turning point, the effects of the new digital technologies would appear through automation and the generation of novel things (Bundesamt für Landestopografie swisstopo, 2020; Schwab, 2016).

4.2 Current situation

Digitisation is becoming the driving force for innovation in business and society. Now we are right in the middle of the retail 4.0, which is driven by emerging technologies such as AI and Bigdata. These technologies also characterise retail 4.0, because most of the companies in the traditional market will experience complete transformation in the coming years. They expect to achieve greater flexibility, higher productivity and efficiency and lower costs. However, the greatest potential of retail 4.0 consists of its ability to create new business models and strategies. It is difficult to predict which companies can benefit from these developments. The following chapter used two digital business models to analyse the current situation of having retail 4.0 in Switzerland.

4.2.1 Third-party payment

Global competition is increasingly becoming an innovation competition for the companies of the developed industrial nations. Although, Swiss prefers having invoice instead of paying online while online shopping, third-party payment is still slowly gaining momentum in Switzerland. In recent years, various mobile payment solutions have been launched on the Swiss market such as Apple Pay and Samsung Pay. Likewise, PayPal also launched its mobile payment version in the year 2020 (PayPal Schweiz, 2020).

Accordingly, the Swiss Bank also focused on FinTech solutions. As an example, PostFinance AG introduced its subsidiary Twint AG in 2014; UBS, Zurich Cantonal Bank and Six Group created its competitor Paymit. In 2016, Twint and Paymit merged to the same company Twint AG, and a year after the migration of the userbase followed. Nonetheless, they only presented around 500’000 users in 2018. According to the study of ZHAW and University of St. Gallen, the preferred payment methods in Switzerland are still debit card (29%), cash (27%) and Credit card (22%) (Auf der Maur et al., 2020). The use of mobile payment is just under 2%. The characteristics of the main Twint-user were between 20 - 49 and most were female. Notably, in the 50+ age group, including the Baby boomers, represented almost the same volume as the age group between 20 - 49 (Bundesamt für Statistik, 2019). In that case, the elder population and the user volume are the

restraining forces towards the third-party payment and mobile payment expansion. However, this merge is still the most relevant market change from the Swiss perspective towards new digital business models (Swiss Payment Monitor, 2019).

NFC and mobile payment methods have great potentials and their potentials are far from exhausted. As shown in figure 7 below, the percentage of using third-party payment in Switzerland on distance selling tended more to mobile the payment method than other third-party payment methods.

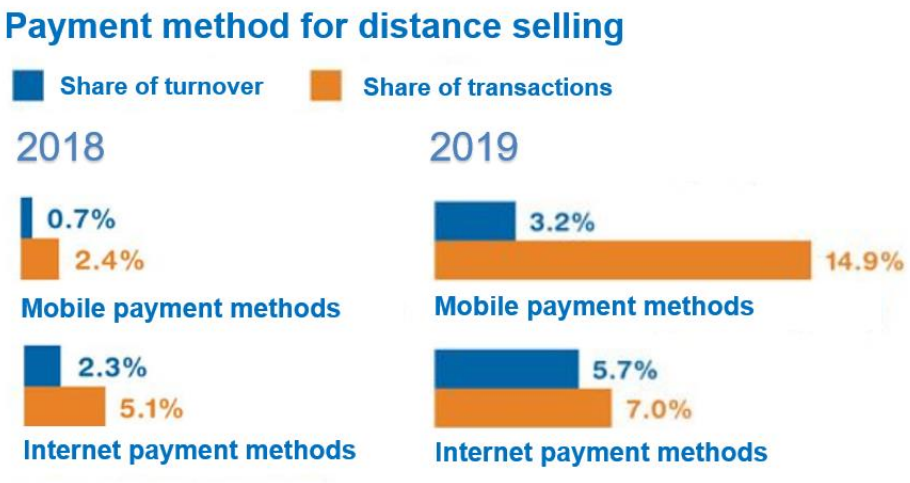

Figure 7: Payment method for distance selling (Gehring et al., 2018; Swiss Payment Monitor, 2019)

To emphasise, in a one-year time, the registered user on Twint doubled up to one million. In addition, the transaction was over 65 million francs. Despite, the main use was transferred money to another user, 39% of the transactions were on site and only 14% were made online or in e-commerce. Moreover, to encourage the farmer to enter the digital world, Twint does cooperation with the Swiss Farmers' Association, and over 1000 farm shops enable cashless purchases now (Twint, 2020a). Based on the market consolidation and public acceptance of mobile payment, it offers a nourished soil for thriving other digital business models (Swiss Payment Monitor, 2019).

With this Swiss payment method, Switzerland could associate with other European countries to strengthen cooperation in the mobile payment. In the European Mobile Payment Systems Association (EMPAS), a bigger user database and data

could enhance the payment services as well as implicate the business collaboration in Europe (Twint, 2020b). This is the first and fundamental step to IoT networking, which provides a safer, easier and more transparent transaction method. Especially in this pandemic time, even WHO recommends contactless payment to stem the spread of the coronavirus, because the physical contact with the banknotes can transfer bacteria or viruses (Gardner, 2020).

4.2.2 Development of e-commerce

As global Internet penetration continues to increase and the e-commerce industry grows faster, it is easier than ever to "do business". Therefore, companies may digitalise their core business sooner or later in the retail 4.0. Digitisation generally refers to the change from analogue to digital processes. These processes are managed by the technologies and equipment. Furthermore, by using ICT, it ensures that works and processes are converted or integrated into digital processes and run completely or largely automatically. Digital business models in B2C and C2C are expanding in the effect of digitalisation. Consequently, this kind of online businesses create better value and offer a lower price for the end-users. The consumers, therefore, let them be advised by the salesperson in the shop, test and inspect the desired product, but ultimately purchase it online, often at a lower price. E-commerce not only offers a lower price but also convenience. Today's modern company's strategy highly focuses on customer-orientation. Usability of the product and dependency of the consumers are the key success factors of stable growth. Moreover, the ability to think ahead of the competitors and customers is strongly required by companies and entrepreneurs. The importance of a strong online presence for physical retail is driven by technologies as well as the new consumer purchasing behaviours. Only with this change in customer behaviour patterns lead to such a comprehensive paradigm shift. Therefore, customer-oriented business structures strongly require the digitalisation of products, services, value chains and processes. According to this, the new form of disruptive business models has been increasing in recent years (Mauz, 2018).

Particularly impressive example from the near past is the German online shopping platform Zalando, because of its user-friendly business strategy. It offers to purchase on account, free shipping and return shipment services. This strategy

improves and simplifies the shopping experience and absorbs the consumer rate. In addition, it creates a new shopping trend, people can order up to 500 CHF on the account and try it at home, in the end, decide to keep and pay for these items or send them back without prepaying anything (Zalando, 2020). This strategy is only successful because of the platform disruption eliminates their fixed costs. Actually, it is nothing more than a digitalised intermediary business. The core of Zalando is to create a simple and secure online shopping experience. Therefore, Zalando can use its 31million customer database to disrupt its platform. Business intelligence will find the consumption pattern and align with its services. Consequently, Zalando is able to evaluate customer preferences and offers further personalised services, for example, “Pickpost” a personalised delivery and return services (Zalando, 2020; Zalando Marketing, 2020). Furthermore, in the year 2018, Zalando was the largest Swiss online shop with its estimated turnover of CHF 785 million. At the same year, the market volume in the Swiss online and distance selling sector was around CHF 9.5 billion. This corresponds to an increase of around 10% over the previous year (Schultz, 2019). While Internet trading grew steadily in recent years, sales in stationary trading have been declining since 2010, which has allowed omni-channel approaches to gain in importance. Large retailers have been integrating online trading as an additional distribution channel for several years with the aim of reaching a larger customer segment. As an example, department store chain Manor, leading Swiss omni-channel Import parfumerie and even convenient stores Coop and Migros provide an online platform and within 3 days standard delivery services (Coop, 2020; Import Parfumerie, 2020; Manor, 2020).

Comparatively, other C2C platform and sharing economy business models are rising. Especially in this pandemic time, most businesses rely on delivery services. People are ordering an increasing number of meals and staple foods at home; recruiters have to find logistics workers under high pressure. Particularly, food delivery service platform Eat.ch records 30% more website visits and 50% more restaurant orders currently. Eat.ch offers the platform to restaurants and its customers. Either the restaurant delivers with its own couriers or the deliveries are made by courier companies with which the platform cooperates. However, most of these delivery services are lacking workforces. Temporary manpower

such as cashiers, drivers or logisticians and commercial employees to handle online orders is profoundly demanded (Torcasso, 2020).

Moreover, the increase in private transportation is boosting the demand for rapidly available vehicles. Indeed, rental bikes and e-scooters are booming in the recent year. Supported by the mobile payment technology and via QR Code scan, customers can easily unlock the vehicle and travel to the destination where cars are not able to. In terms of the number of inhabitants, there are 13.4 vehicles per 1000 inhabitants in Zurich, even more than Berlin, Barcelona or London as shown in figure 8 below. The intension of the new digital business models is not only due to the increasing flexibility request, but also social responsibility and climate protection. For instance, the bike-sharing company PubliBike is offering free rides to the nursing and hospital staffs during this pandemic period. However, numerous questions arise regarding the safety, road traffic regulations and also risks associated with using such devices. Moreover, stability, solidity, grip, braking, speed, conflicts with other users etc. are elements that also should be considered (Bird, 2020; Leu, 2019; PubliBike, 2020).

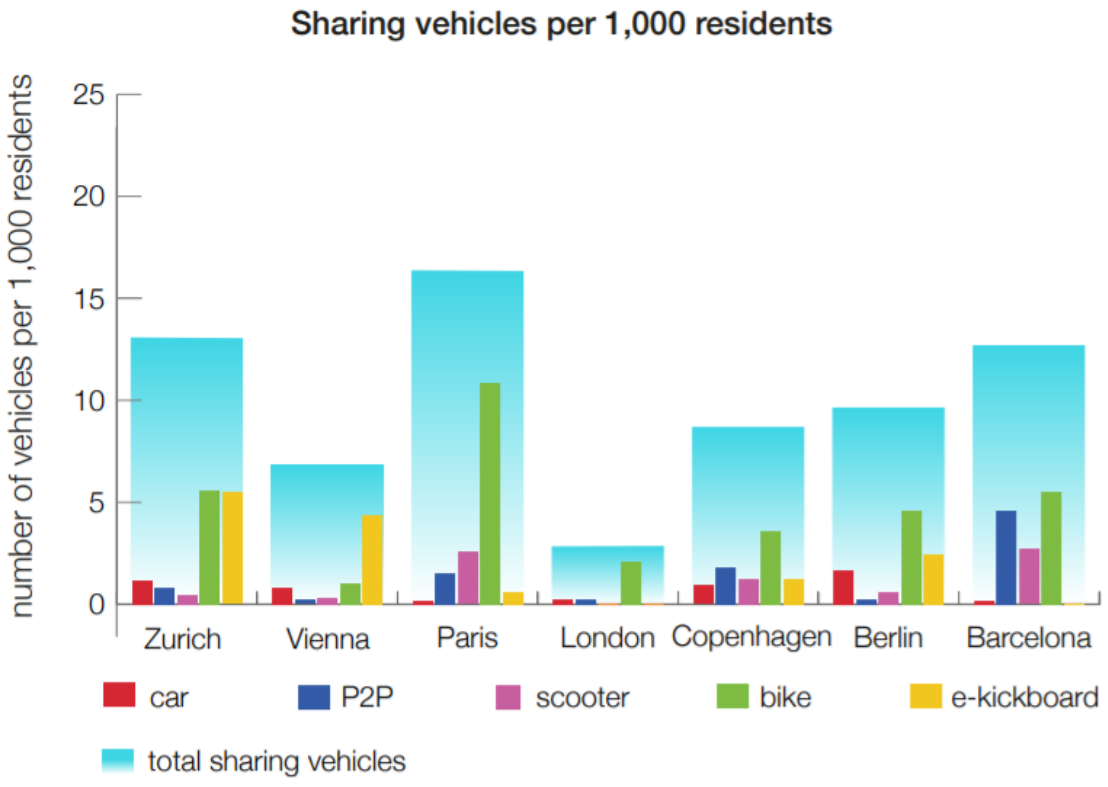

Figure 8: Sharing vehicles per 1000 residents (Auf der Maur et al., 2020)

4.3 Future trends

In the past, it was relatively easy to draw industry boundaries, but in recent years it has been observed that the boundaries between some industries become increasingly blurred. This phenomenon is also known as deconstruction. Moreover, this digital transformation changed consumer behaviours and the products as well as services. “Digital business models are no longer merely an option for companies; they are vital for sustainable economic success.” as Steven Bailey (the Chief Strategy Officer of AOE, 2020) said, the digital revolution is now relevant to all companies in every country.

4.3.1 Improved online and offline retail connectivity

The arrival of 5G networks can make online and offline retail connectivity more efficient and enable new application scenarios. For example, every step in the retail market could be connected with each other via IoT, thus, the value chain is digitalised. Therefore, Swisscom, Sunrise and Salt are currently expanding 5G services in Switzerland. As a result, the infrastructure should be expanded along with the services offered. However, the implementation of 5G network did not work that smoothly as in China. In the middle of 2019, resistance increased among the population and government authorities, especially in the French-speaking part. The reason for the suspension on 5G antenna construction in these cantons is that they are waiting for a proved health impact on 5G mobile radiation. To note, there is still no consensus between federal and cantonal moratoriums regarding extending of 5G antenna. Consequently, the 3 ICT companies emphatically insist that the federal government asserts itself and continue to build where there is no resistance (Bundesamt für Kommunikation BAKOM, 2020b; Bundesamt für Umwelt BAFU, 2019).

Despite all the protests, within one month, the number of 5G antennas in Switzerland has tripled. At the end of November 2019, 562 5G antennas were in operation. Over the turn of the year, the availability of antennas of the 5G was massively increased, now at 2295 (Bundesamt für Kommunikation BAKOM, 2020a). Figure 9 shows the coverage corresponding to the data compilation of these tree mobile network operators. The market leader Swisscom has achieved its goal

and has already been able to supply almost 90% of the Swiss population with 5G since the beginning of 2020. Sunrise is now coming up with a close collaboration with Huawei to similar coverage. The fact that Sunrise relies on Huawei is also due to its leading technology with 5G. Huawei has made a significant contribution to the development of the new mobile phone standard (Häberli et al., 2020).

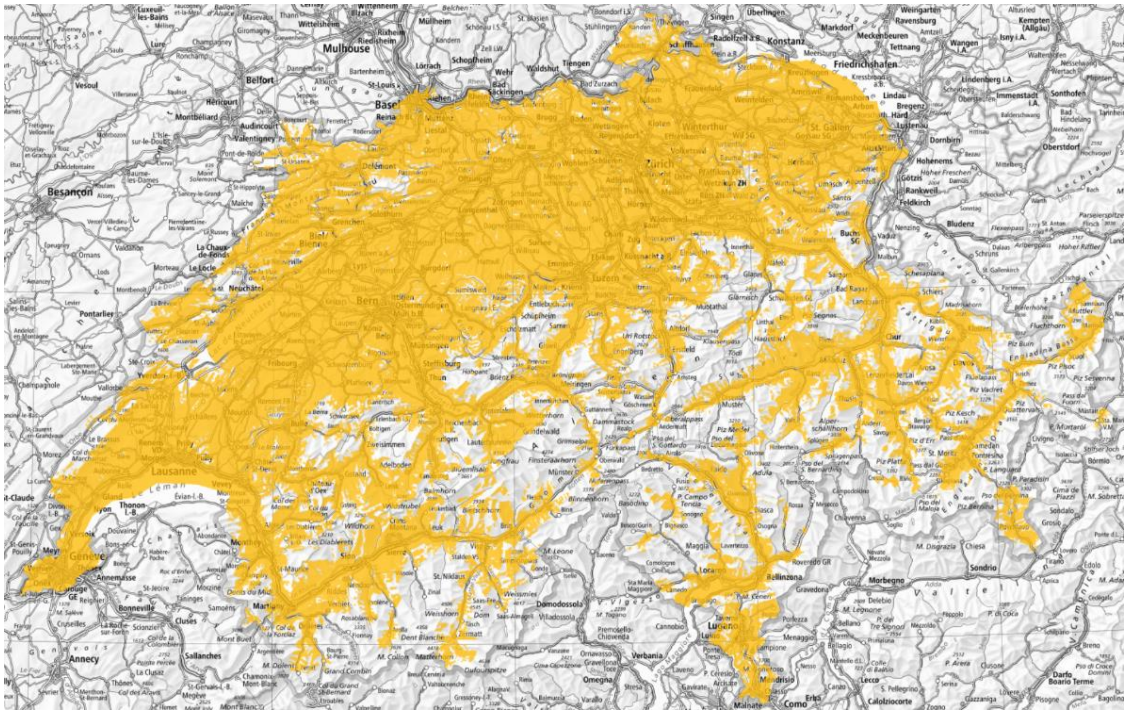

Figure 9: 5G coverage in Switzerland (Bundesamt für Kommunikation BAKOM, 2020a)

According to The Federal Office of Communications (OFCOM), 5G networks represent a revolution in mobile communications. They open the door to new areas of deployment and digital business models, in particular the IoT, mobile and omnichannel retail. Therefore, the retail industry could profit from the more digitalised value chain and create further possibilities. Additionally, the connectivity of 5G increases the security requirement. This statement was also confirmed by the Commission and the European Agency for cyber security (Bundesamt für Kommunikation BAKOM, 2020b; European Commission, 2019).

4.3.2 The challenge of cyber security

In all these future scenarios the reliable protective boundaries between the digital and physical world are disappearing. Since the cyberattack environment changed dramatically in recent years, this not only increases the potential impact of successful cyberattacks but also necessitates a fundamental rethink in dealing with these threats. Cybercrime and cyber espionage professionalise themself and evade the usual protective mechanisms such as firewalls, anti-virus programs and intrusion detection systems. Attacks are increasingly targeted at specific organisations or individuals, particularly in the booming digital retail industry. Cyber security can forthwith be understood as a consistent development of IT security (Eckert, 2017).

According to the report on the EU coordinated risk assessment on cyber security in Fifth Generation (5G) networks, the European Commission was positive about the development of a 5G network. 5G is seen as the future backbone of the increasingly digitised economies and societies and should connect the most objects, systems and even critical sectors such as banking, energy and health. Furthermore, 5G creates an IoT ecosystem with higher transparency, which could enhance the retail and economic cooperation globally. However, the blurry boundary between the digital and physical worlds makes it complex and hence difficult to achieve these goals. New security paradigm contains increasing exposure to attacks, more hidden remote access points and backdoors. Moreover, the new 5G network architecture strengthens the sensitivity of certain pieces of network equipment or functions. Particularly, the integrity of networks and threats to availability tend to be the major security concern due to 5G networks. The challenge for all retailer is to continually reassess the existing policy and security framework of the sector and its ecosystem (European Commission, 2019; Zehnder & Plüss, 2019).

Comparatively, the Federal Act on Data Protection (FADP) policy, revised in 2019, higher the entry barrier of new digital business models and strengthen the data usage in e-commerce. In most digital business models, personal data are simply recorded and collected while using email or phone login. This revision creates more transparency and strengthens the participation rights of data subjects

whose data are processed during online shopping. Correspondently, the competitiveness is more complicated for foreign digital business with other cyber security standards. For this reason, several Swiss companies could make the necessary adjustments in advance is because FADP is closely aligned with GDPR. Although Switzerland is not an EU member state or a member of the European Economic Area, the reform of European data protection laws indirectly consequences Swiss retail sector. Explicitly, companies which are based in Switzerland and conduct business within the EU and have access to personal data of their EU customers, suppliers and employees will bear. Namely, in the negligence of GDPR, sanctions can rise to a maximum of 20 million euros or 4% of worldwide annual turnover (Knijpenga, 2020). However, the implementation of GDPR and revision of new FADP still pose major challenges for Swiss companies. In 2020 the EU is expecting the implementation of "ePrivacy" regulation, which is focused on data protection on the Internet and electronic communication. This could direct Swiss' new cyber security regulation towards online behaviour. Henceforth, paradigm shift at board level within an organisation is required to establish the ongoing cyber security process (Eidgenössischer Datenschutz-und Öffentlichkeitsbeauftragter (EDÖB), 2019; European Commission, 2019; PwC Schweiz, 2015).

4.4 Summary

Switzerland has been a pioneer in several revolutions and has an extraordinary stable legal and economic system. As mentioned in chapter 4.1, Switzerland was in the leading position over the decades, because of the ability to expand their strength and use the right opportunity. Currently, as reviewed in chapter 4.2, digitalisation is gradually progressing. For example, although mobile payment technologies already exist for several years, it has not broken through to the mainstream. Unlike China, the payment method does not limit the C2C business growth. In contrast, e-commerce functions very well based on trust and profound legal system. However, the Swiss population tend to be generally conservative. Therefore, these restraining forces slow down the digitalisation process. It is especially to be seen in chapter 4.3.1 the case that the obstacle of expansion of 5G. Regardless of how fast the development is, the digital era is driven by nature. Every company and country have already stepped in this process and will be

sooner or later transformed. Collectively, this chapter provided a detailed analysis of Switzerland's digital business development.

As mentioned in the introduction, this thesis aims to examine the key factors of the digital business models in both countries focused on the retail industry. In order to provide better understanding and evaluate the similarities and differences, the chapter compares both countries in a different environment based on the collected information in chapter 3 and 4.

5 Comparisons

This chapter analyses the diverse differences of both countries' macro environment of having a digitalised retail industry. For making a better structure, PEST analysis categorises the structure into 4 different parts: political, economic, social and technological. Additionally, comparison under a special condition – "Coronavirus" is also provided at the end of this chapter (Hungenberg, 2014).

5.1 PEST analysis

An industry cannot grow without the influence of its surroundings, especially in the retail sector. Wherever a business outlet is established, it should be tailored to the environment. The key compared factors of each environment are captured in figure 10.

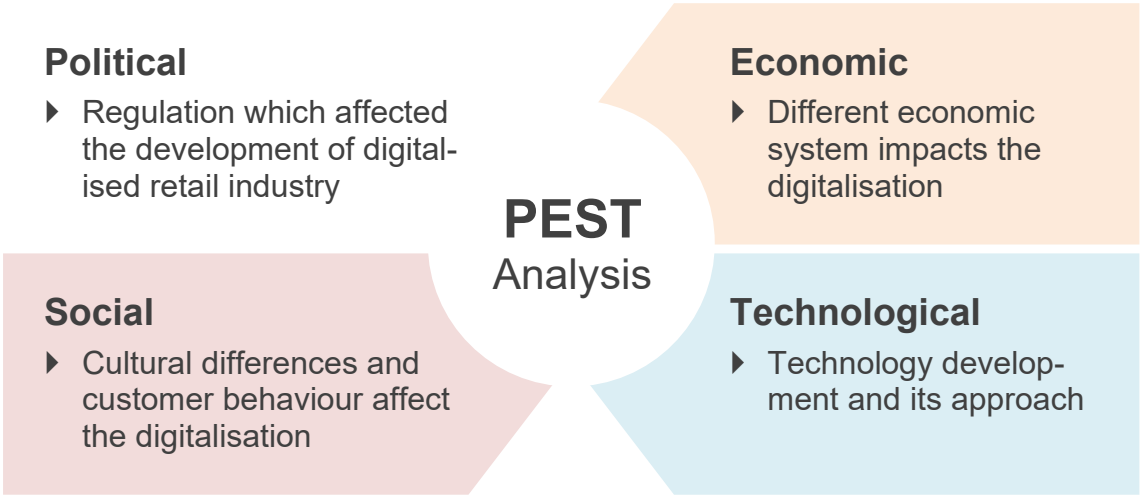

Figure 10: Key point of PEST Analysis

5.1.1 Political

Although both countries actively accelerate the digital business models, the method they use is completely different. Plenty of initiatives such as The Belt and Road (OBOR) initiative boost the strategic goal of building a modern economic system in China. Domestically, the government let the market growth by itself and intervene in a later phase, as shown in chapter 3.3.2. Moreover, Chinese regulations simplify the tax process for cross-border e-commerce, which encourages enterprises to become globalised. To compare with, Switzerland has more well-

developed legal systems and stable political systems. The regulations in all business environment are profound. In addition, as analysed in chapter 4.3.2 Swiss government is highly focused on cyber security in order to provide a safe digital business environment, which relatively decreases the speed of digitalisation (Chen et al., 2019; Eidgenössischer Datenschutz-und Öffentlichkeitsbeauftragter (EDÖB), 2019).

Comparably, China's digital retail are more likely to thrive, due to fewer restrictions and more rooms. For example, FinTech as a new digital business model gained dramatically its importance in China, whilst this market is still a blue ocean in Switzerland. The well-developed legal system and a strong economy in Switzerland limit the retail industry to seize the best opportunity of progression into the digital era. However, China's highspeed digital growth sacrifice the sustainability of business intensively. Emerging e-commerce or other C2C platforms are eliminated from the market due to new cyber regulation. Therefore, a well-conceived regulation, such as the one in Switzerland, could fill the gap, even at the cost of a slower growth rate.

5.1.2 Economical

Switzerland's economy is stable and grows gradually by an average of 4.5% over the decades (Die Volkswirtschaft, 2010). Its mature traditional banking system accounts for a larger proportion of this economic growth. Having a dominant banking industry also remains the exchange rate steadily at a high position. Therefore, the Swiss retailer has a less competitive advantage against Chines e-commerce in terms of the export and price level. China's cross-border e-commerce related transactions such as payments, logistics, customs clearance, and tax refunds are gradually untied due to the construction of OBOR. Moreover, Switzerland's strong economy provides a stable foundation for traditional business models, especially in banking. Therefore, it is difficult for start-ups and new established C2C business models such as FinTech to penetrate the swiss market due to the high-cost issue and less user rate (Duc-Quang & Allen, 2014).

In contrast, China's massively economy growth occurred in this recent two decades. As a result of digitalisation, the high GDP growth every year is inextricably

linked to the well over one billion people in the internal market. For example, the e-commerce platform and FinTech industry are raising personal economies. As examined in chapter 3.2, the Internet coverage and the spread of mobile phone enable the establishment of an online business with hardly any entry barriers. Moreover, as presented in the chapter 3.2.1 traditional retail market also profits from new purchase pattern. Therefore, the use of the Internet also increased the annual income of rural population significantly. These personal economies contribute as a large drive to the macroeconomic (Chen et al., 2019; Cheng & Zhang, 2020).

It seems that China's high population and GDP growth is providing a huge opportunity for an organisation looking to thrive, especially, when Switzerland's market is saturated. Nevertheless, the retail industry has already globalised, and the digital business adapted itself to the countries' condition. Notably, several foreign digital business models as discussed in chapter 4.2 are perfectly settled in Switzerland. It is worth to mention that due to the Chinese tourist boom Alipay entered the Swiss market in 2016 (Heim, 2016).

5.1.3 Social

As analysed in chapter 4.2 the continuous growth of mobile internet users lifted the development of various mobile applications. As shown in figure 11, the majority of Internet users, about 50%, were with the intermediate education level. Additionally, figure 12 shows that under 30% of the Internet users have modest monthly income, which is above 5000 (688 CHF). Correspondingly, products with low quality and prices are in great demand via e-commerce because most of the customer segments are in the relatively low-income level. Moreover, in recent years, as China's urbanisation is well progressed, the percentage of the country's rural population in the overall population has been declining, while rural Internet users are climbing. Therefore, the general low education and income level users result in a price sensible consumer segment. With a low-cost strategy, the new digital business could easily penetrate the market and acquire numerous new customers. For example, at the beginning phase, taxi platform DiDi offered coupons after every ride. The service was nearly for free, after deducting the coupon (Cheng & Zhang, 2020; China Internet Network Information Center, 2019).

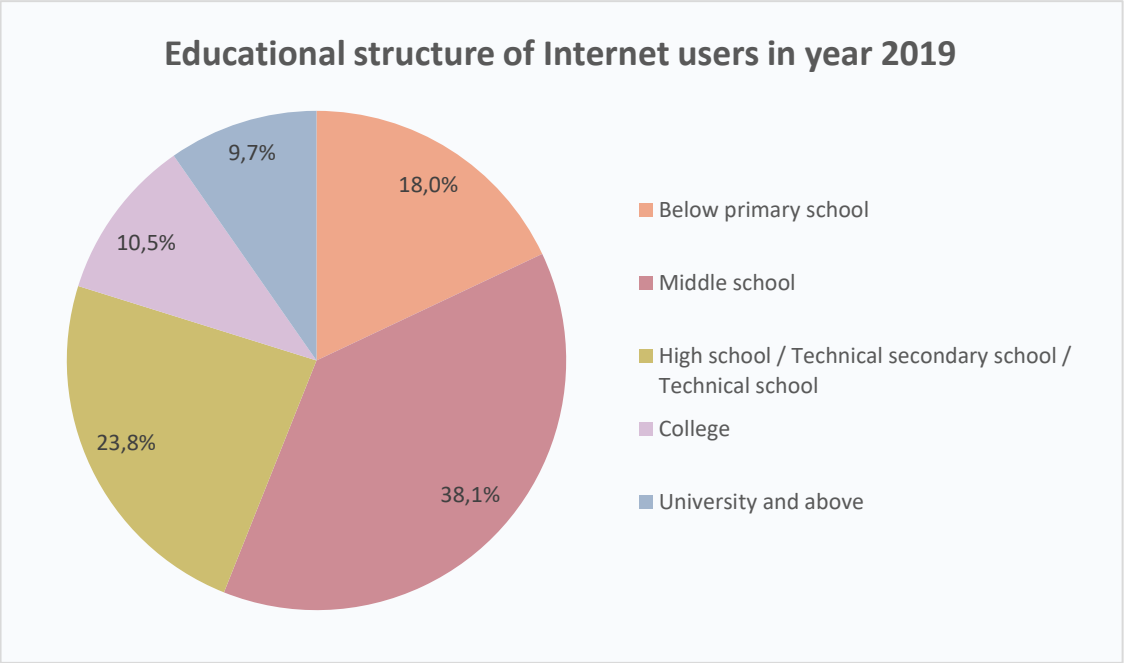

Figure 11: Educational structure of Internet users in year 2019 (China Internet Network Information Center, 2019)

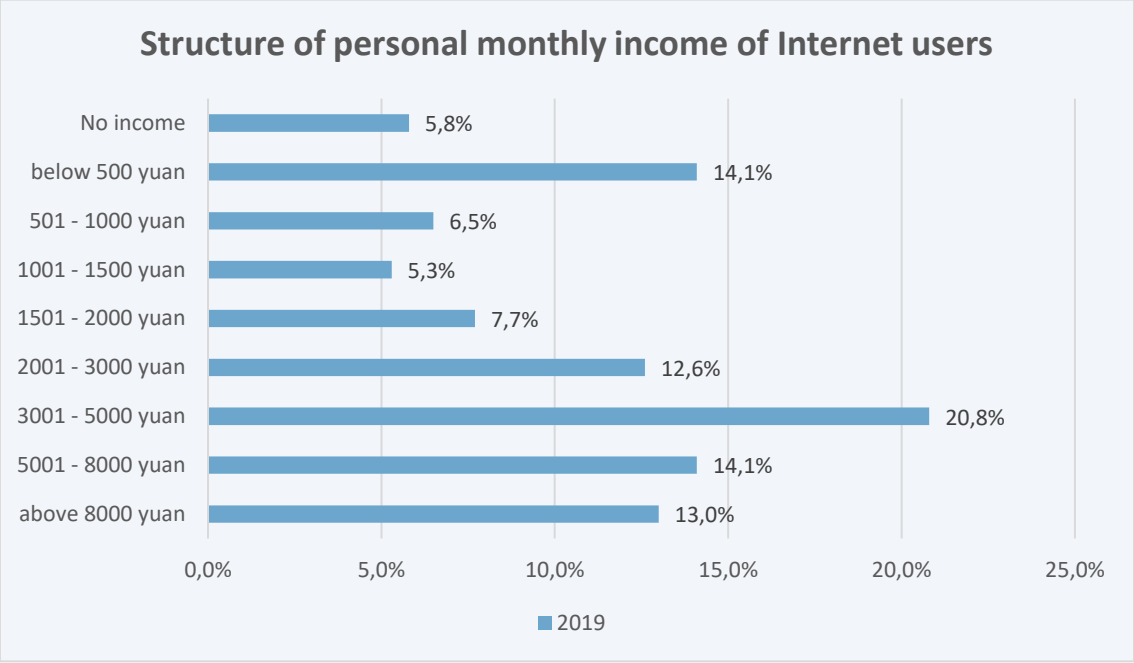

Figure 12: Structure of personal monthly income of Internet users in year 2019 (China Internet Network Information Center, 2019)

On the contrary, Switzerland with only around 1/17 population compared to China, which differs each other also from consumer psychology. The big user part, as present in chapter 4.2.1, has an average higher education level and income than

Chinese users. Therefore, for this group of people, digital business models should have a great chance to gain importance. However, quality is the key factor instead of price. In addition, the increasing ageing population is also relevant to emerge digitalised retail. Especially, the baby boomer and generation X, who were born between 1946 – 1975, represent around 40% of the population (Bundesamt für Statistik, 2019). As emphasised in chapter 4.2, this age category represents the restraining force in the development of Switzerland's digitalisation. Collectively, the difference in user size and culture between China and Switzerland determine, besides the political factors, the development speed of digital 4.0 (Auf der Maur et al., 2020).

5.1.4 Technological

Both countries develop quite similarly in this environment. The emerging technologies such as AI and Bigdata enable the conversion of text, sound, pictures and images into a range of data streams that can be integrated, stored, manipulated and quickly communicated without compromising. Therefore, online shopping sites are improving, the quality of logistics is enhancing, and payment methods are becoming faster and safer. Take the third-party payment and e-commerce, which were presented in the previous chapters, as examples. Technologies are deeply integrated into all digital retail processes. E-commerce is using business intelligence (BI) to predict consumer paradigm shift by showing "you would also interest in" items to keep a customer longer on the website and encourage more purchase rate. Moreover, in warehouses, logistic robots store the goods through the supply chain automatically. Consequently, this affects the global production, management, and marketing models as well as industry chains and supply chains. Therefore, the convergence of technology and digital offers the possibility for the ultimate realisation of e-commerce as well as omni-channel retail for the traditional market (Guo, 2001; Häberli et al., 2020; W. Hu, 2018)

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Based on China's dramatically GDP growth, which was resulted from the Internet revolution digitalisation, China seized the opportunity in 5G development likewise as analysed in chapter 3.3.1. The widely commercial use of 5G allowed new disruptive business models, such as the unmanned grocery shop and omni-channel

retail to emerge. As illustrated in chapter 3, the digital business models complement each other and form an ecosystem. Therefore, the traditional retail market could be transformed into an omni-channel retail model. Accordingly, together with Huawei, around 90% of the Swiss population is been covered with 5G by the beginning of 2020 in spite of the domestic restraining force. Furthermore, China shows in the established unmanned shop again its spirit of risk-taking. Because this digital business model dropped dramatically after the freshness passed due to a higher price than normal shops. Therefore, China's digital business life cycles are difficult to sustain while the anxiety toward the new technology limits the speed of Swiss's retail 4.0 (Häberli et al., 2020; Helmke, 2019; Wu, 2019).

5.2 Digital business models applied during Corona Virus

Digital business models already changed the consumption pattern of the Chinese population. Consequently, the radical lockdown decision did not change too much in living habits. Except for not going outside, shopping malls and entertainment stores are badly affected. Nevertheless, the schooling system, which has gradually digitalised in a certain process, such as announcement, fee-paying, and assignment are facing revolutionary changes. For Chinese traditional school system to algin with online courses is a huge step due to the cultural high strict top-down relationship between teachers and students. However, this could be the development of the western school system. Moreover, education courses would also change its business model by providing online courses and video lessons. Furthermore, the General Office of the Ministry of Industry and Information Technology (MIIT) issued a circular proposal to organise information technology enterprises and medical research institutions to jointly tackle the problems. Use artificial intelligence, big data, 5G and other technologies to speed up the vaccine and new drug development, virus detection and diagnosis. Moreover, it may also improve the prevention, control and treatment and eventually boost the efficiency of anti-epidemic. As an example, regarding chapter 3.3.1, 5G played an important role in the construction of newly built hospitals and web-based teleconsultation in Wuhan. Furthermore, together with IoT, wireless temperature measurement and contactless devices are applied at the airport and hospitals (Deloitte, 2020; M. Hu, 2020; Zheng, 2020).

Comparatively, the political lockdown decision caused by the Coronavirus likewise boosts Switzerland’s digitalisation process. Especially, traditional market, such as restaurants and grocery stores either adapt itself to the situation or be extinguished. However, Switzerland has not yet formed a complete digital retail ecosystem, and all companies are trying to provide helpful strategies to overcome this pandemic. For example, Manor digitalised its supermarket additionally to the existing e-commerce site. The intension of Manor is to cover its customers as well as to gain new potential customers from daily needs and reduce the people contact. Additionally, Coop offers free charge delivery services; Migros and Pro Senectute provide neighbourhood aid for risk groups. On the platform amigos.ch, there are already over 14.000 helpers among Switzerland. Although the labour cost in Switzerland is much more expensive compared to China, the delivery service reaches its peak during this pandemic time. Most postal services are overloaded, which causes the delivery delay up to a few weeks. Furthermore, food delivery services are positively affected. For example, Eat.ch expanded 50% of food orders and 30% more visits (Coop, 2020; Import Parfumerie, 2020; Manor, 2020; Migros, 02.042020; Torcasso, 2020).

Correspondingly, despite the different digitalisation developments, both countries could still exceed their current technology standards. Similarly, digital business models are accelerating, and partially the new business potential is arising in this epidemic. In other words, online schooling, C2C platforms and deliver services could take significant advantages in the future or even subvert the traditional markets.

5.3 Summary

This chapter compares the digital business models in both countries from distinct perspectives. The political factor has a considerable influence on the expansion of technology. Comparatively, the cultural factor including the number of customs, social mores, cultural education, values and income matters significantly the people's consumption tendencies. Besides, a stable economic environment provides a sense of safety, therefore revolution occurs gradually. Consequently, China’s

highspeed development and Switzerland stable digitalisation are well presented with considering all these influencing factors.

In the past, it was relatively easy to draw industry boundaries, but in recent years it has been observed that the boundaries between some industries become increasingly blurred. This phenomenon is also known as deconstruction. Completely new value chains and industries are being created as a result of converging technologies and the almost infinite possibilities of information and communication technologies. The new retail concept and the new integrated system will be demanded by the market. For example, during the coronavirus traditional retail market has been forced to be digitalised, although they might want to approach the transformation differently before. As a result, this transformation offers retail business completely new growth opportunities and growth strategies (Adolphs, 2013; Hungenberg, 2014; Yang et al., 2018).

6 Interviews

In order to offer broader consideration of the digital business models in China and Switzerland, this section discusses three interviews conducted in March and April 2020. The first interview was with Mr He, the CEO of The World Internet of Things Conference (WIOTC). This organisation is based in China and has been recently expanding to Switzerland. The second interview presents by Mr Berner, the service manager of Huawei Switzerland. This Chinese ICT service provider collaborates with several big Swiss ICT companies such as Swisscom, Sunrise and Salt regarding 5G projects. Ultimately, a supplementary interview proposing customer perspective is carried out by Dr. Wu graduated from the University of Zurich (UZH). This interview offers additional information as a user, who experience intensively the digital retail differences.

Together with the aforementioned perspectives and evidence regarding digital business models in both countries, the interview contents were summarised into 4 categories for each on the interviewees. Correspondingly in chapter 6.1 to 6.3 represents the 4 part: technological impact, data security, experience exchange and development outlook.

6.1 WIOTC

The World Internet of Things Conference (WIOTC) is an international organisation settled in China. It aims to share experience and IoT acknowledgement among the companies in the organisation to widen their business potential.

6.1.1 Technological impact on traditional business models

The Internet is virtual and has an impact on the real economy, whereas technology such as IoT is positioned as a global economic carrier that integrates the digital and real economy. Therefore, technology will not impact on traditional business models, conversely, it has the potential to accelerate the help of developing traditional enterprises. For example, as mentioned in chapter 4, grocery store Coop offered self-checkout machine could reduce waiting time and stuff cost. Moreover, as discussed in chapter 5.1.4, retail 4.0 contributes a high accuracy and quality, which increases production efficiency, and reduces labour costs and

working time. Mr. He (personal communication, March 12, 2020) agreed that if a power outage occurred in the traditional store, the accuracy will decline. However, based on IoT a pre-selection plan will be activated to respond at any time before a power outage occurs. Although it may have an impact on employment, the relevance is small. In other words, it affects employment by reducing workforces, but in fact, the social value remains the same (Twint, 2019; X. He, personal communication, March 12, 2020).

6.1.2 Data security

The security aspect of the IoT is an important system component. The so-called confidentiality is relative. With the development of information technology as analysed in chapter 5.1.4, society is becoming increasingly open and transparent. According to Mr. He (personal communication, March 12, 2020), in the future, all events will be transparent through visual real-time tracking and retrospective tracing provided by the IoT. Therefore, as well as examined in chapter 4.3.2, digital business will be more secure. Every company, as well as countries, has its own security system whether it is physical or digital. For example, WIOTC is using a three-layer encryption system to protect personal data. By facing a hack attack, alarms and anti-attack algorisms will be engaged automatically. Moreover, in the field of communications, counterattacks will be initiated to produce false information. Notably, this could be a development trend, which was considered in chapter 5.1.4, in terms of having 5G or IoT in the future business routine. Despite, Mr. He (personal communication, March 12, 2020) sees 2 levels of approaches in data security. The first is that higher transparency will be required in the future digital business. Secondly, forming an IoT business ecosystem will offer more reliable and advanced confidentiality than the Internet (X. He, personal communication, March 12, 2020).

6.1.3 Experience exchange

China’s exploration and application of new technologies in the IoT (from bike-sharing in the recent years to the current economic demonstration area of the IoT, as well as further examples as mentioned in chapter 3.) is very forefront and smooth. The infrastructure model and business models in the field of IoT systems

are relatively comprehensive but not yet systematic. Mr. He (personal communication, March 12, 2020) suggested that the problem could be solved by puzzling these fragments together and implementing it in Switzerland. There is a high chance to form a Swiss system because the first step is essential. All companies should dare to innovate and to be the pioneer in the digital transformation. Switzerland could benefit from collaborating with China regarding building up a world IoT system by the means of combining the technologies from Chinese companies and the advanced international IoT technologies together (X. He, personal communication, March 12, 2020).

6.1.4 Development outlook

Mr. He (personal communication, March 12, 2020) predicts that in the future the IoT economy with Chinese characteristics will emerge. Due to the traditional economic structure, which was demonstrated in chapter 3.1, it is difficult for China to outstand of the world, and the Chinese were well aware of this situation. Therefore, he believes that China will choose the new path since using new digital business models to expand is much easier than the traditional models. For example, cross-border e-commerce as mentioned in chapter 3.2.2. Currently, the output value of China's IoT exceeds 1 trillion. In 2020, the GDP of the IoT industry will reach about 1.7 trillion. Although the development is fragmented, China’s growth rate is expeditious with approximately 30% - 40% compared to Europe’s 10% to 20% growth rate (W. Hu, 2018; X. He, personal communication, March 12, 2020).

Furthermore, he believes that the Swiss government is also highly concerned about the development of digitalisation. As mentioned in chapter 4.3.1, the expansion of 5G could bring the retail industry into another level. Therefore, a technological exchange with China will not only benefit in the sales market, science and technology fields, but also in social state governance management. Importantly, lessons learned from China’s cases and experience will contribute to building up IoT infrastructure, economic concept model and systematic (European Commission, 2019; X. He, personal communication, March 12, 2020).

6.2 Huawei

Huawei is a Chinese telecommunications equipment supplier, which has successfully established its overseas subsidiary in Switzerland. With the aim to gain the largest market share and be the leading global ICT provider, Huawei offers not only smart networking devices but also technologies such as 5G, Cloud, IoT and AI. Notably, the 3 biggest Swiss ICT companies, Swisscom, Salt and Sunrise have collaborated with Huawei on some 5G projects.

6.2.1 Technological impact on traditional business models

In general, people are restrained towards digitalisation due to lack of understanding about new technologies. As shown in chapter 5.1.3 the Swiss are generally conservative, because of historical and cultural aspects. Therefore, the risk issue is one of their major concerns for postponing the company digitalisation. Digitalisation will clearly affect the strategy of all companies. Take the pandemic as an example, such a situation is challenging for the whole society and changing many business routines. As illustrated in chapter 5.2, many retailers realise that digitalisation is the key to quickly redefine their business processes. Otherwise, traditional retail business will collapse, because it affects deeply on revenue and life cycle of the company. In contrast, digital business models positively affected in the lockdown. For example, the food delivery service Eat.ch mentioned in chapter 5.2. Although a traditional retail business might want to pursue the digitalisation in a completely different way, the virus accelerates it and somehow changed the attitude towards digitalisation positively (Torcasso, 2020; R. Berner, personal communication, April 9, 2020).

6.2.2 Data security

If it comes to the legal requirement such as GDPR, it is clear that all companies have to strictly follow and adopt all necessary processes correspondingly. Even though, it is a huge challenge to keep the overview in this large environment and to manage the administrative effort. In addition, Mr. Berner (personal communication, April 9, 2020) emphasised that data security should not be an excuse for not implementing digitalisation. On the contrary, technology or digital business models can better control privacy. Comparably to chapter 4.3.2, with technology

growth, there are enough software and applications to ensure security. The goal of digitalisation is to improve efficiency, no matter what process business is taking. For example, third-party payment uses advanced encryption mechanism algorithm to prevent hack attacks (European Commission, 2019; R. Berner, personal communication, April 9, 2020).

6.2.3 Experience exchange

It is particularly important to build trust in the products and services and to strictly follow all state regulations to successfully establish a business in Switzerland as a digital company. As discussed in chapter 5.1.1 and 5.1.2 Swiss is more conservative and has a profound legal system. On the other hand, China is more radical about handling and implementing new technologies and refining the regulation in a later phase. Take the implementation of 5G as an example from chapter 3.3.1, the 5G technology could be simply implemented without any objections being raised anywhere, which indeed pursues an immediate efficiency. On the contrary, as illustrated in chapter 4.3.1 Switzerland as democracy needs to deal with the disagreement on 5G expansion before further construction in a certain area. Therefore, technological development slows down because of the inclusion of different opinions (Bundesamt für Kommunikation BAKOM, 2020b; Zheng, 2020; R. Berner, personal communication, April 9, 2020).

Moreover, a large and qualitative partner network is crucial in order to scale in the market. For example, as presented in chapter 4.2.1 Twint needs to collaborate as much as possible with other retailers, even farmers, to provide larger coverage of mobile payment and therefore expand its market. This result is because of a different culture and mentality as described in chapter 5.1.2. However, globalisation is an upcoming trend caused by digitalisation. For accelerating the digitalised retail industry in both countries, it is essential to approach the mutual mentality (Twint, 2020a; R. Berner, personal communication, April 9, 2020)

6.2.4 Development outlook

IoT and especially artificial intelligence is the most important aspect to boost the whole digitisation. These provide the foundation for efficiency in the business environment. However, IT companies' product and innovation will only offer a base load of technologies, and the implementation is happening in the economy. Both China and Switzerland have the same information technology standard, but some Chinese metropolis has a further advanced standard of digitisation than many cities in Europe. For example, in Shenzhen where the headquarter of Huawei located is an extremely technology-oriented city. As described in chapter 3.2 the entire payment process is digitalised and all public transportations are electrically operated. If Switzerland considers Shenzhen as an example and uses it as the leverage, Switzerland can develop in that way. However, according to Mr Berner (personal communication, April 9, 2020), the pressure is still too small because the Swiss business environment is still relatively thriving.

As discussed in chapter 5.1.2 Switzerland is more manageable, because of its infrastructure and the booming economy. Many retailers do not yet force themselves to exploit the full efficiency of digitisation, because the implementation of digitalisation only takes place when the pressure is high. In addition, Switzerland and the Swiss economy is extremely cautious and conservative. Besides the 5G expansion, which was presented in chapter 4.3.1, the education system is also quite overwhelmed by the current coronavirus situation. The topic of home-schooling has been discussed a lot, nevertheless, every school has a different approach and solves this problem differently. The situation with the coronavirus forces almost all every industry to rethink about digitalisation (R. Berner, personal communication, April 9, 2020).

6.3 Supplementary interview from a consumer perspective.

This interview with Dr. Wu graduated from the UZH represents the point of view from an ordinary person to support the thesis questions. He is a Chinese student who has studied in Switzerland for over 5 years and witnessed the retail digital transformation in both countries.

6.3.1 Technological impact on traditional business models

The physical stores are enormously affected by the digitalisation. Take the Chinese e-commerce platform Taobao as an example, customers could easily find the best-desired product from tens of options, based on the numerous reviews and comments. Accordingly, the price and quality of the same product could be compared among different shops. Moreover, mobile payment also reversed the consumption habit. According to Dr. Wu, he prefers to pay with mobile payment, with Alipay in China and with Twint in Switzerland, due to convenience and safety. As a result, digital payment delivers a superior shopping experience, which also promotes more transaction. However, digitalised retail is not accepted among the elderly consumer group and people who are critical toward digitalisation. Retailers should put more efforts to approach an optimised strategy to maximise their customer coverage (C. Wu, personal communication, April 30, 2020).

6.3.2 Data security

In terms of third-party payment, it not yet raises any cyber security concern, based on the incremental developing technology level and intensive update frequency of payment application. Conversely, mobile payment offers even more safety during physical purchase. However, regarding currently increasingly used online distribution channel such as Facebook and Instagram, the storage and protection of personal data become more critical. Therefore, security-conscious users do not upload excessively sensitive data or important information online. As a result, refined cyber security regulations, both in China and Switzerland, enhanced the cyber environment towards a healthier digitated purchasing environment (C. Wu, personal communication, April 30, 2020).

6.3.3 Experience exchange

China should align its quality control and legal regulation according to Swiss standard in e-commerce. In this way, online shopping offers a persistent development as well as healthier e-commerce environment, therefore better user experiences. Despite, China provides many convenient details in the purchase experience in the digitalisation process. For example, the parking fee of shopping malls can be paid directly by exit via QR-code scan. Such technologies not only reduce the labour cost for the retailer but also increase the efficiency for customers. As a success factor to improve the customer journey, Switzerland should investigate more in the third-party payment method in order to expand the coverage rate (C. Wu, personal communication, April 30, 2020).

6.3.4 Development outlook

China has taken a great chance of using digitalisation and transformation to catch up with other developing countries. Moreover, China is still taking the advantage to investigate and implement emerging technologies such as 5G and AI to prepare for the next retail revolution. However, the economic efficiency will stay in the focus, because not everything needs to be digitalised. Therefore, more resources could be invested in strengthening a better-legalised principle for the cyber environment. In contrast, Switzerland will expand its digital transformation, because the opportunity in the retail industry is still underexploited. Moreover, Switzerland as a leading country for technology innovations and start-ups has a big advantage of developing new digital business models. A promising strategy will be the combination of the macro retail market with new relevant technologies (C. Wu, personal communication, April 30, 2020).

6.4 Summary

Based on the three interviews above, this chapter provides a holistic and practice-oriented viewpoint towards the digital business models in both countries. WIOTC as an organisation offers a systematic overview of the development of digital business. Huawei as an already established Chinese company in Switzerland focuses on the business base and practical evidence. Additionally, the supplementary interview with Dr. Wu reflects a brief user perspective. All three interviewees offer similar ideas towards all four categories as shown in table 1 below. Even though, these perspectives are from the people in different hieratical levels and positions in the digital business models, namely organisation, company and customer.

Table 1: Key idea of 4 interviews

Categories	**Content of ideas**
Technology impact	Traditional and digital markets are positively affected
Data security	Is raising importance; Technology provides better security
Experience exchange	China approach to Swiss legal regulation; Swiss collaborate with Chinese digital companies
Development outlook	Great potential in both countries digitalised retail business

The digitalisation overturned the traditional retail market. Technology simplifies several processes and offers more efficiency to both business and consumer. However, the traditional business which does not respond to the retail 4.0 will be excluded from the market. As a result of digitalisation, cyber security raises its importance in both countries. China prepares its retail market for global expansion. Moreover, globalisation also contributes significantly in terms of collaboration and information exchange of emerging technologies. For both sides, digital transformation intensifies countless opportunities to disrupt business into the blue ocean while combining their advantages and compensating for their weaknesses.

The next chapter concludes this thesis with the discussion, limitation and outlook sections.

7 Conclusion and discussion

This thesis compares China and Switzerland's digital business models in the retail industry. Based on the comprehensive digital business models, the theory part focuses on third-party payment models and e-commerce platform. Because payment and business models are the most important fragment of retail. Moreover, as described in chapter 3.3 and 4.3, emerging technology 5G and consequent cyber security issue are the key factors of retail 4.0. Therefore, they are as well considered in the theory part regarding future digital business development. Furthermore, in order to provide an overarching view of this comparison, this thesis considers various perspectives by using PEST analysis in chapter 5. This specific analysis better structured the macroenvironment regarding political, economic, social and technological factors. Lastly, the interviews presented in chapter 6 offered again different approaches, a broader organisation overview, a standardised business perspective and a focused individual perspective. Based on the findings above, both countries presented their reliability in different directions in terms of digital transformation in the retail industry, Switzerland is in its legal framework and China is in its technology development. Therefore, the approaches to a digital retail industry are different, but there are still similarities in that respect.

As discussed in chapter 3 and 5, China's fast technology growth was not only related to high population number but also the rapid implementation of technologies. According to Mr. Berner (personal communication, April 9, 2020), Chinese users, in general, have positive attitudes toward the digital transformation than Swiss consumers since the digital business models could enhance the individual financial development. For example, numerous people who ran a small private business, as well as other unemployed individuals, could easily find opportunities by opening the online shop. Therefore, poverty has been reduced through digitalisation, and the rural areas have been urbanised. In contrast, Switzerland's conservative attitude complicated the digital transformation in the retail industry (R, Berner, personal communication, April 9, 2020). For example, as shown in chapter 4 and 5, the big part of Swiss customers prefers to purchase in a traditional way, which means going to physical stores and paying with cash. The

strong Swiss economy model accustomed the society to this fixed traditional consumption pattern. Additionally, transformation is not urgent in Switzerland, because the traditional shopping habit is more pronounced, and people feel more secure.

However, Mr. He (personal communication, March 12, 2020) emphasised in the interview that today's consumption pattern was more prone to the advanced usability based on the technologies, in Switzerland slowly but surely. Therefore, as mentioned in chapter 3.2 and 4.2, most digital business models such as taxi, delivery and payment services moved to the mobile market and released their phone applications. This continual technology development promises a more intelligent and secure retail business environment online and offline. Moreover, Mr. He (personal communication, March 12, 2020) believes that IoT will bring a trillion-scale economic market, which means an extremely large potential of digital business opportunity globally. Accordingly, a new digital retail model is forming with the help of the connectivity offered by emerging technologies. As acknowledged in chapter 3.3.1 and 4.3.1, 5G could integrate the traditional sales organisations with the online retailing, which has a chance to result in a new convergence system such as omni-channel model. Eventually, there will be no pure e-commerce or traditional retailing, a new integrated system will be required by the market (Yang et al., 2018). Especially during the pandemic, digital business models clearly demonstrated competitive advantages compared to the traditional market. As indicated in chapter 5.2, digital business models and omni-channel market increased their market share, whereas some traditional markets have been bankrupted. Direct and decentralised communication between physical shops and online distributions is crucial in the modern economy.

Nevertheless, anxiety about security and restraints of digital development will rise among the population. Chapter 3.3.2 and 4.3.2 revealed the challenge of cyber securities and legal framework in both counties. In China, the high-speed development of the digital business models urgently requires a more completed refined legal framework since the e-commerce market now has grown sizable certain size. As presented in chapter 3.2, China promotes the accelerated development

of cross-border e-commerce and encourages enterprises to be globalised. Therefore, the Chinese government needs to continually improve the cyber security laws and e-commerce regulations to the international standard. On the other hand, Switzerland has a more well-developed legal system and a stable political system. With data security regulation standards GDPR and FADP, the government is highly focused on cyber security in order to provide a safer digital business environment. However, as examined in chapter 6.2, the Swiss legal framework provides severe security to the Swiss economy but complicated and decelerated the digital transformation at the same time (Mr. Berner, personal communication, April 9, 2020). Especially, disagreement between federal and cantons in a democratic environment could lead to a lower efficiency such as the unsatisfied extension of 5G antenna described in chapter 4.3.1. Even though Switzerland's retail development is not as digitalised as China's, Switzerland still has a robust and leading economy among the developed countries.

Consequently, to answer the research question "What are the key factors of the digital business models in retail trade industry?", the findings above suggest the following points as the most important key factors to accelerate the digital business models in the retail industry.

- Acceptance of technology
- Online and Offline connectivity
- Security

Nonetheless, because of the scope and time limitation, this thesis discussed laterally rather than vertically. Therefore, the thesis eventually provides a general and comprehensive investigation of the digital business models comparison study between China and Switzerland in the retail industry. Especially, it could contribute as an interesting starting point for other relevant studies to derive further insights in a related area.

7.1 Limitation of the study

The retail industry, which was analysed in this thesis, represents only one part among the overarching industry regarding digital business models. Similarly, this thesis chose the most topical and commonly seen technologies (third-party payment and 5G) and digital retail model (e-commerce) among various others in this broad topic described in chapter 3 and 4. Moreover, as mentioned before, this thesis includes several different perspectives of the comparison to obtain a broader vision regarding digital business models, however, there are still more aspects to be illustrated in the future study. In chapter 5.1, the PEST analysis discussed the political, economic, social and technological factors of retail industry between China and Switzerland in a macro way. However, according to the scope and the aim of this thesis the microenvironment analysis is not introduced in this chapter. Furthermore, due to the time limitation, there is no representative amount of survey conducted for customer perspectives. Since this topic is extremely recent, the references resources are relatively difficult to be collected. However, by having a language advantage, it is possible to broader the literature review regarding articles and specific regulations. Diverse Chinese, English and German references are used.

7.2 Recommendation for further research

The ultimate goal of conducting this research is to contribute insightful instruction to further research in the related field. Consequently, this section proposes further research in the areas of digital business models in the retail industry. The suggested additional research topics as showing below could be considered in detail besides the limitation aspect:

- Microenvironment of digital business models in China and Switzerland
- Customer perspective towards digital business models in China and Switzerland
- Impact of economic models towards the competitive advantage of digital business models in both countries.
- Collaborations between China and Switzerland
- Mergers and Acquisitions (M&A) activities on technology between both countries

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9 Interview lists

Xuming He, Chairman of The World Internet of Things Convention. WIOTC China, Beijing. Interview of 12.03.2020

Ronald Berner, Service Director at Huawei Technologies Switzerland AG – Dübendorf. Interview of 09.04.2020

Dr. Chengguang Wu, PhD graduated from University of Zurich, Interview of April 30, 2020

10 Appendices

Interview Mr. HE, WIOTC

What is the aim of the World Internet of Things Conference (WIOTC), how important are the collaborations with Europe?

The WIOTC is a major event related to human socio-economic development. Human has experienced three revolutions: agricultural, industrial, and information revolution. Europe was the leader in the industrial revolution, which laid the foundation for world development. Human society is still developing, and the next revolution will be the Internet of Things (IoT) revolution, also known as the wisdom revolution. This revolution is not the technical and technological level that humans understand. Not exaggerated, it will bring a trillion-scale economic market. In terms of the business economy, it is an extremely large potential business opportunity. From the perspective of social revolution, it has overturned the traditional life mode, work mode and production and sales mode; has changed the social structure and system. Therefore, the IoT is not just a new technology. The IoT has already been seen on the Internet. The Internet as a virtual network can bring the social practice to the rapidly developing era of virtual information development. The IoT is connecting objects, people and things altogether. Which means, it is even larger and stronger than the Internet, and will be more integrated with the real economy. Thus, altogether, it is a great revolution and not just the object network.

The WIOTC is an international organisation settled in China. It has many Chinese elements, but it not only covers China. China is currently at the forefront of the development of the IoT and it is one of the national development planning strategies. For Europe, it was in the leading position in the industrial revolution, but in the era of the intelligent revolution, if Europe does not “seize the beach”, the development of the IoT in Europe may fall behind or lag behind. From the time now, when the information revolution is highly developed, such as payment systems and Internet applications, it can already be seen that European countries are not significantly faster than China, and even China is already clearly ahead. There-

fore, our organisation is with the willing to link Europe's strong industrial technological strength and development with the IoT and upgrade it to form a new economic carrier.

Europe is an important part of the world ’s society. As for Switzerland, it has the state-of-the-art precision equipment, strong international influence and numbers of international organisations. Hence, we should learn, absorb, and work together with EU to prior develop IoT economy, IoT industry and Internet. Furthermore, we could comprehensively utilise national strength as well as material, human, and financial resources to seize the opportunity when a new revolution arrives.

What are the plans of WIOTC to help the companies which want to enter the Swiss market?

The aim of WIOTC is to dock with Switzerland and cooperate with the Swiss government. We can support the companies who want to enter the swiss market by forming the bridge between China and Switzerland. At present we have preliminary preparations, such as liaison with some UN agencies, namely ISO, UNESCO and ITU. In the next stage, we are planning to build a European IoT headquarters as a demonstration base in Europe. With the cooperation and support of Dr. Martin Schnauss, we are still determined to strengthen the collaborative research in this area. We have already contacted a Swiss institution, and we are ready to have further communication and cooperation with the Swiss government. We are forming a working group with Dr. Martin Schnauss, by which to easily dock with the Swiss government and realise a Swiss branch. Thereafter, we will be able to conduct international meetings in Switzerland and set up an IoT economy demonstration area and demonstration base, providing solutions and investment opportunities. Finally, we wish to build a Swiss IoT infrastructure, a regional economy and a smart city of the Internet of things. Consequently, we can improve Swiss cutting-edge technologies with functions of visual real-time tracking and retrospective tracing. By using these methods, we can build an IoT trading platform, which will make the products more valuable and occupy higher market share compared to modern times.

Compared with the development and characteristics of the Internet, the IoT does not have a mature structure and model yet. At present, no country, system or company has developed it more maturely. Developed countries, as well as powerful countries around the world, are looking forward to exploring and establishing systems, standards and even world network systems. Political geography or national geography is also one of the obstacles. Therefore, we want to connect the continents and coordinate the establishment of a global level of IoT network. It will play a significant role in the globalisation of the IoT, new economic and social development. This is also the purpose of our organisation: advancing a new revolution, moving human life and work towards an intelligent era.

What are the actual challenges?

There are three issues.

1: People are lacking in understanding of the Internet of Things. Regardless of national dignitaries, experts or some think tanks, not to mention ordinary people, they only lock the IoT in the field of objects and new technologies. That is the cognitive challenge.

2: At present, some systems in Europe are similar to the primary development system, but which cannot be called as IoT system. They fail to achieve the visual real-time tracking, retrospective tracing, and commercial customisation proposed by the IoT Conference. These involve the implementation of difficult technologies, which exceed the narrow band that we can see now, towards broadband or even ultra-wideband. This is the structural model challenge.

3: The lack of government-led policy formulation and direction means that the new strategic opportunity of the IoT is not considered as a national key economic development project. Companies are only in pursuing of freshness, preempting of standards, and only having sporadic application exploration. The IoT is currently only a fragmented market in the world. It has not become a global network system and has not realised a global concept.

What challenges raise newly during COVID-19?

This Virus is actually a revelation to the IoT. I personally believe that the outbreak of coronavirus will not be a long-term concern towards the terms of current social and economic development. After a while, maybe six months, it will gradually fade away. In China, some scientific and technological methods of the IoT provide information assistance and support during the epidemic. For example, the wireless temperature measurement and contactless devices were widely used. Analyses of genetic changes of viral genes as well as epidemiological development and status were also applied.

Which segment is the main focus of WIOTC?

There are 17 major industrial fields in the WIOTC White Paper including industrial, agricultural, medical care, artificial intelligence, ecological protection, etc. Europe should start with industry or agricultural, (for example, Netherland invests a lot in agriculture) or energy and take artificial intelligence as a pioneer. Among these 17 fields, we, in China, focus on the development of medical, health, industry, commerce, transportation and energy, which are closely related to people's livelihood as the primary field of our development.

China as a pioneer, what are the things that Switzerland can learn from China?

This is also the direction for the next development of our conference. China’s exploration and application of new technologies in the IoT is very forefront and very smooth. For example, bike-sharing in the early days, and now the economic demonstration area of the IoT. The infrastructure model and business models in the field of IoT systems are relatively comprehensive but not yet systematic. Which means, we can use these fragments in Europe to form national systems and European systems, possibly, Swiss IoT systems. From the perspective of our conference, we can cooperate with Europe regarding technology, entity, strategy, etc. to support the development of the European IoT industry. We need not only China to make a model first, but also to build a European model, even a Swiss model. We should dare to innovate and dare to lead, just like the European leading the steel industry and automotive industry. It is feasible to focus on investing financial and material resources to jointly develop the IoT with Europe. Luckily,

China and the EU have many established business cooperation foundations. To be honest, from the perspective of national strategy, Sino-US relations are more sensitive in the region of the Americas, on the other hand, Europe has more stable and friendly relations with China. We should take the lead in being the pioneers of the next great revolution. We can combine the technology of Chinese companies and the most advanced international IoT technology to work with Europe in order to build the world's IoT system. Besides, we can provide the infrastructure model, the basic concept, materials and technology of our conference to connect global commerce and cast a model for the next era. This is also our goal of development in the next century: to benefit the human society, the public of having intelligent life, work and production.

What is your point of view towards risk and data security?

The security aspect of the IoT is an important system component. The so-called confidentiality is relative. With the development of the Internet of Things, society is becoming more and more open and transparent. In the future, I predict that all events will be transparent through visual real-time tracking and retrospective tracing provides by the IoT. Therefore, the question will be whether the personal information should be kept secret. Every company, as well as countries, has its own security system whether it is physical or digital. We, the WIOTC, have a three-layer encryption system, the country has five layers of encryption system and each system has its own automatic security system. The hack attack will cause automatic alarms and anti-attack algorisms. For example, in the field of communications, counterattacks will be initiated to produce false information. So, we can answer this question into two levels. The first is that future society will have higher transparency. The second is that the IoT will have more reliable and advanced confidentiality than the Internet.

What is the impact of IoT on traditional Business Models?

IoT will not impact on traditional business models but has the potential to accelerate the help of developing traditional enterprises. For example, in industrial manufacturing, artificial intelligence will support the machines and equipment to produce automatically. In the conventional models, if there is a power outage, the accuracy will decline. However, the IoT will provide a smart solution to respond

at any time before a power outage occurs, a pre-selection plan will be activated. Therefore, it rather helps than impacts.

The Internet is virtual and has an impact on the real economy, while the IoT is positioned as a global economic carrier that integrates intelligent technology, digital economy, information technology, and the real economy. Instead of having a conflict with the real economy, it improves the economy. Secondly, the IoT has high accuracy and high quality, which will reduce costs. Additionally, IoT increases production efficiency and reduces labor costs and working time. Although, it may have an impact on employment, but it will not be a big deal. In other words, it affects employment by reducing workforces, but in fact, the social value remains the same.

What is the development outlook of China and Switzerland?

At 12th Five-Year Plan of China, the IoT has not yet begun; it was still in the initial exploration stage. After the 14th and 15th Five-Year Plans, it was the good time of IoT development. I predict that in the future the IoT economy with Chinese characteristics will be formed. Due to the traditional economic structure, it is difficult for China to outstand of the world, the Chinese are well aware of this situation. Therefore, I believe China will choose a new path. Because using a new business models to expand will be much easier than the traditional models. Currently, the output value of China's IoT exceeds one trillion. In 2020, the GDP of the IoT industry will reach about 1.7 trillion. Last year, it was around 1.3 trillion. Although the development is fragmented, the development rate is expeditious. China’s growth rate is approximately 30% - 40%, also Europe has 10% to 20% growth rate. Even though I know less about Switzerland, I think the Swiss government is also very concerned about the development of the IoT industry. I believe that if we deepen cooperation and development, Switzerland will also have a significant advance in IoT and be in the forefront of the world.

I look forward to two points: The world IoT economy must be formed, and it will be formed. Based on the Swiss advanced technology strength such as traditional machinery manufacturing and special precision instrument manufacturing, if we could deepen our cooperation, we can involve IoT not only in the sales market,

science and technology fields, but also in social state governance management. Secondly, China has a wealth of successful cases and experiences. We, WIOTC, are located in China and familiar with Chinese environment. Moreover, we have the product resources of tens of thousands of IoT companies worldwide and the world IoT rankings data. We evaluate the contribution and capability of each of these IoT enterprises. This information could also be provided to Switzerland. According to our world IoT infrastructure and economic concept models, to build up the systematic IoT system at the levels of country, region and enterprise will be our contribution to human society. I believe that through strengthened cooperation between Switzerland and China, we will make drastic changes to the current era of hegemonic society.

Interview Mr. Berner, Huawei

Could you please brief introduce yourself?

My name is Ronald Berner, I am employed in the company Huawei Switzerland, my function is Service Director which includes in the area of the Enterprise Business Group. This means our business customers, service with maintenance services and professional services and delivery as well as service sales in this area. Because we work in an indirect business models, we are interested in training and enabling all partners from within our team to take over the entire scale part in Switzerland.

What is the aim and role of Huawei in Switzerland? (strengths, challenges, direction of development)

Huawei aims to be the leading global provider of ICT (information and communication technology) infrastructure and intelligent devices. In every technology division that Huawei offers, Huawei intends to gain the largest market share and become the number one. Huawei brings digitalisation to every person, home and organisation with the goal of a fully networked, intelligent world. This is the strategy of Huawei as a whole, and of course we want to pursue this in Switzerland as well. Especially in the 3 main areas such as the consumer business, which is actually about mobile and smart devices; carrier business, especially 5G technology with the customer, such as Swisscom, Salt and Sunrise; as well as in the whole consumer business area, where my focus would actually be, which is mainly focused in the network environment and storage. In addition, Huawei also wants to assume social responsibility. This means that we want to work closely with a number of universities, fund study places and establish a research and development centre.

As a company, almost half of the staff work in research and development. We have the ability to react quickly to the development needs of our customers, if it fits our strategy. Huawei has over 75'000 patents worldwide and now also in Europe the most patents.

The biggest challenge at the moment is the sanctions from the USA. It is forcing us to redesign certain products. This also leads to interrupted supply chains, especially for American products. Furthermore, we need to gain market share in almost all technical areas and create trust in our brand. Except 5G.

The development beside a leading role in the 5G standard goes in the direction of IoT (Internet of Things), cloud services but especially in the direction of Artificial Intelligence. Among others we have developed the first AI capable mobile chip the "Kirin 970".

What are good prerequisites for successfully establishing in Switzerland?
For success in Switzerland, it is particularly important that we can continue to build and intensify local trust in our products. In this way, we will be able to differentiate ourselves from competitors with quality, reliability and service. And Yes, cooperation with the state is also important, but here it a matter of ensuring that we strictly follow all gestures from the state (such as work permits, data security). What we absolutely need is other companies. Partners who collaborate with us and sell our product, work with our product and thus implement the projects. We are building a large and qualitative partner network to scale in the market. Only with a good partner network we can cover the markets.

What challenges/opportunities arise for Huawei during the corona virus?
Such a situation is a challenge for the whole society and changes many routines. New processes must be defined quickly and anew. It is very essential to maintain communication, data transfer and the digital environment. For example, if you are forced to close your business, you have only costs and no revenue. But if you are at an advanced stage of digitalisation and you already have an online shop, then you can generate revenue and continue to exist.

What we can do now in this situation, which is also our social responsibility, is to provide, if possible, equipment for digitisation. For example, video conferencing systems, if they are required by our customer, and accordingly we also offer support and consulting. What is difficult in this situation is that many processes are

interrupted, and we notice this especially when delivering our equipment to our customer. It is difficult because we cannot deliver in time and on schedule.

We want to fulfil our social responsibility, which is one of our goals, and offer support in the areas of telecommunications and digitalisation. We also want to return to a "healthy and trustworthy" environment as soon as possible so that all processes can function normally again. Therefore, it is not the right time for us to think about opportunities and how we can position ourselves or how we can get the best out of the situation.

Is the impact of coronavirus for companies with digital business models less than those with traditional approaches?
That is quite clearly the case. The whole situation has an extreme influence on digitisation. Businesses in the traditional environment will immediately notice that it's not working properly and the whole business case collapses. It will clearly affect the strategy of all companies. They will think about a digital environment after the Corona crisis. This situation will change the view on digitalisation, and I think it will also accelerate. But we will also get a differentiated view on digitisation, because we learn during the challenges.

In this situation, many businesses realise that digitalisation is the key. Many companies reacted and implemented immediately. Accordingly, digitisation has been driven forward. We don't really want the virus, it comes by nature, actually we want to pursue it in a completely different way. However, I think in a crisis you become inventive and seek means to make certain things better. Now, especially for digitalisation, it can have an effect of stimulating us to think and let us look at the situation again.

What is your opinion about risk and data security? For example, GDPR
In my perspective, GDPR is a legal requirement that we have to follow strictly and adapt all necessary processes in the organisation correspondingly. It has to be taken into account that all personnel are informed about this legal requirement and strictly adhere to it. It is also a huge challenge to keep the overview in this

large environment and to manage the administrative effort. But we must pursue this.

Moreover, security also plays a major role here; people know too little about it and are scared. It's also a point with technology drives, you put the safety on top and say: it's not safe, so we don't do it. But I think that's also an excuse, because there is enough software and APPs to ensure security. Security is then used as an excuse for not operating.

Do you think the digital business models can better control privacy?
Yes, absolutely. From my point of view, digitisation has the goal behind it, no matter what process you take, whether it's data protection or basic supply process, to create more efficiency. You can also design the process more efficiently. For example, the benefits of digitisation in the whole administration is that some processes will be automated.

In your opinion, what are the development prospects for digitisation in China and Switzerland?
Firstly, I do not think we can compare these two countries and secondly, this is a difficult question.

In China, which has over 200 cities with more than 10 million inhabitants, the level of development from digitisation varies greatly. In Shenzhen, for example, where we have our headquarters, is an extremely technology-oriented city. The standard of digitisation is further advanced than many cities in Europe. For example, the entire payment process, the city is cashless. Cash payments are practically no longer possible in some places, and some places no longer accept them: all public transportation is also electrically operated. But there are also cities in China which are much further behind.

On the other hand, Switzerland is more manageable, we have an excellent infrastructure and a booming economy. I believe that this does not yet force us to exploit the efficiency of digitisation to the full. I think we are also very cautious and conservative, also in our company. The education system, for example, is

quite overwhelmed by the coronavirus in the current situation. The topic of home-schooling has been discussed a lot, but how to finally implement it, every school has a different approach and solves this problem differently.

In China they are much more radical, they simply implement new technologies, for example 5G and IoT. In Switzerland, also in the business environment, you are in a democratic liturgy (culture), you are careful, and you gather different opinions and clarify a lot. This slows down the whole technological development. I think now in just such a situation with the coronavirus, forces everyone to think faster and to act faster.

Now not referring to countries, our development perspective of Huawei has the focus on mobile infrastructure (5G), the infrastructure is the basis for digitisation drag. Internet of Things and especially on artificial intelligence, is the most important aspect to boost the whole digitisation. These provide the foundation for efficiency in the business environment.

Huawei's Innovation, Product and Ideal can only offer Switzerland a base load of technology, the implementation is happening in the economy. Implementation always takes place when the pressure is high, and when you realise that you have to react now. The example with Shenzhen, if Switzerland sees this as an example and uses it as a leverage, Switzerland can get to this point. But in my view the pressure is still too small, because the Swiss business environment is still relatively thriving.

What do you think is the reason why China has progressed so fast in technology?

It is not the whole China; it is only isolated metropolises. The main reason I reckon is to be more radical about handling things. Many things were predetermined and prescribed and then just simply implemented without any objections being raised anywhere. In our democracy, the same as with the other decisions that are taken, namely you can always make representation, and companies or state will deal with the objection first. I think that is less the case in China, decisions are implemented more quickly, which of course leads immediately to efficiency. This also

results because of a different mentality. In that mentality people live in China and it works very well. I believe that we are also approaching the Chinese mentality and China the Western mindset.

Interview Dr. Wu, UZH

What do you think how technology impacts on traditional retail market or business models?

First of all, I think there will be a big impact on a physical store, because take Alibaba online shopping platform Taobao as an example in China we can easily find the products we need with lower price and good performance based on other reviewers comments. Secondly, I think it changed the way we pay. Personally, I prefer to use third-party payment such as Twint in CH and Alipay in CN. It brings a lot of conveniences and also provides a relatively safe approach for shopping. Lastly, I think digitalisation bring benefits to almost every part of our daily life. However, you have to know how to use the smartphone or apps.

What is your opinion towards data security?

In terms of the payment, using the mobile payment application, I haven't met any security problems so far. Because I think they have a very intensive update frequency. However, when I use social media software such as Facebook and Instagram, I don't feel my personal information are being protected properly. Therefore, I try to not upload very private or important information online.

What can China and Switzerland learn from each other?

I think Switzerland should accelerate the development of the third-party payment method in order to have more users and also expand its coverage in Switzerland. In China has a lot of unmanned services, which will simplify our life and reduce the personal cost. For example, now can even pay the parking fee automatically by scanning QR-code.

As for China part, I think most of the e-commerce should have better quality control like Switzerland. In this way, it will provide a persistent development of e-commerce. And also, it will bring better user experience for the customers.

How do you see the future development of these 2 countries?

I think China has taken a great chance using digitalisation and transformation to catch up with other developing countries. China is still taking the advantage to

investigate and use new technologies such as 5G, AI etc. to get ready for the next revolution. But I think we should still focus on cost-effectiveness because not everything needs to be digitalised. And also, cyber security should be strengthened under better-legalised principles. As for Switzerland, I think there are more digitalised things we can do in the future. And as far as I know, Switzerland is the best country for start-ups and high-tech innovation, it will be a very promising strategy for Switzerland to better combine the big market with new techs relevant to digital business development.